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ABSTRACT

This report is one in a series of needs assessment publications that comprise the first phase of PROJECT DESIGN, an ESEA Title III project administered by the Fresno City Unified School District. The purpose of this study was to develop an achievement analysis model and to analyze achievement of students in the Fresno City Schools with reference to potential causal factors influencing achievement. Achievement data consisted of comparisons among the various achievement and aptitude data available from both State and local testing program. Three sets of geographical distributions of achievement were developed--for elementary grades, junior high schools, and high schools. Pertinent socio-cultural-economic factors and staffing resource program components were compared with the achievement data to determine probable causal factors. Although family income level, proportion of probationary teachers, ethnic majority, geographic location, and aptitude scores are correlated with achievement scores, the study does not provide material that would support direct cause and effect conclusions. [Some tables may be of poor quality when reproduced.] (DE)

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PROJECT Design

INTERAGENCY PLANNING FOR URBAN EDUCATIONAL NEEDS

5. ANALYSIS OF ACHIEVEMENT

October, 1968

A TITLE III ELEMENTARY AND SECONDARY EDUCATIONAL ACT EXEMPLARY PROJECT

ADMINISTERED BY THE FRESNO CITY UNIFIED SCHOOL DISTRICT

ED038747

Publication #5

ANALYSIS OF ACHIEVEMENT

This report is one in a series of Needs Assessment publications which are listed inside the back cover. The assessment of educational needs was made as the initial phase for Project Design (Inter-Agency Planning for Urban Educational Needs), organized as a two-year project to develop a comprehensive long-range master plan of education for the Fresno City Unified School District in California.

Analysis and statistical research by Dr. Louise Pierce, Research Assistant. Explanatory figures by Richard Mallory. Narrative and editing by Project Design staff.

The work presented or reported herein was performed pursuant to a grant from the U.S. Office of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the U.S. Office of Education, and no official endorsement by the U.S. Office of Education should be inferred.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
LIST OF FIGURES	vi
INTRODUCTION	
Historical Overview	1
Optimum Analysis	2
Purpose of the Study	3
Procedure	3
Limitations	3
Delimitations	4
PART I: TESTING PROGRAM DATA ANALYSIS	
State Mandated Tests	5
District Tests	5
District Testing Program	5
Availability of Data	5
Test Factors	7
Available Test Factors by Grade	7
Test Factors Used	7
School Mean Raw Scores by Test Factors	7
Elementary School Achievement Ranks	14
Geographical Distribution of Achievement Ranks	17
Geographical Distribution of Schools With 3 or More Subject Ranks Deviation from Total Achievement Rank	17

Elementary Academic Aptitude 17

Geographical Distribution Analysis of Achievement Aptitude Ranks 24

Junior High School Achievement Rank 24

Junior High School Academic Aptitude Rank Compared to Achievement 24

Geographical Distribution of Achievement and Aptitude Rankings 33

Senior High School Achievement and Aptitude 33

PART II: ANALYSIS OF RELATIONSHIP OF SELECTED POTENTIAL CAUSAL VARIABLES TO ACHIEVEMENT 39

Relationship Between the Percentage of Probationary Teachers and Total School Achievement 46

School Achievement Ranks Compared by Ethnic Groups 58

Comparison of Schools Grouped by Income Level and Selected Test Factors 64

Comparisons of Aptitude and Achievement by School Size 70

Comparisons of Test Factor Scores - Compensatory and Non-Compensatory Schools 74

BIBLOGRAPHY 78

MAJOR CONCLUSIONS IDENTIFIED BY PROJECT STAFF 79

Procedural Conclusions 79

Substantive Conclusions 80

LIST OF TABLES

Tables		Page
I	District Testing Program	6
II	Available Test Factors by Grade	8
III	Test Factors Used	9
IV	Elementary School Mean Raw Scores by Test Factors	10-11
V	Junior High School Raw Scores by Test Factors	12
VI	Senior High School Mean Raw Scores by Test Factors	13
VII	Elementary School Achievement Ranks	15-16
VIII	Elementary School Academic Aptitude Rank in Fresno Compared to Achievement	22-23
IX	Junior High School Achievement Rank	31
X	Junior High School Academic Aptitude Rank Compared to Achievement	32
XI	Senior High School Achievement and Aptitude - Grade 10	37
XII	(Omitted)	-
XIII	Elementary School Data	41-42-43
XIV	Junior High School Data	44
XV	Senior High School Data	45
XVI	Elementary School - Rank of Probationary Teacher Percentage Compared With Achievement Rank	48-49-50
XVII	Junior High School - Rank of Probationary Teacher Percentage Compared With Achievement Rank	55
XVIII	Senior High School - Rank of Probationary Teacher Percentage	57

Tables		Page
XIX	Elementary School Achievement Ranks Compared by Ethnic Groups	59-60
XX	Junior High School Achievement Ranks Compared by Ethnic Groups	61
XXI	Summary of Average Rank Achievement for Elementary Schools by Major Ethnic Groups	62
XXII	Summary of Average Rank Achievement for Junior High Schools by Major Ethnic Groups	63
XXIII	Grouping of Elementary Schools by Family Income Level	65
XXIV	Aptitude Comparisons by Income Level Groups Using Weighted Mean Scores - Elementary Schools	66
XXV	Achievement Comparisons by Income Level Groups Using Weighted Mean Scores - Elementary Schools	66
XXVI	Grouping of Junior High Schools by Family Income Level	67
XXVII	Aptitude Comparisons by Family Income Level Groups Using Weighted Mean Scores - Junior High Schools	67
XXVIII	Achievement Comparisons by Family Income Level Groups Using Weighted Mean Scores - Junior High Schools	68
XXIX	Grouping of High Schools by Income Level Groups	69
XXX	Comparisons of Available Test Factors Using Weighted Mean Scores - High Schools	69
XXXI	Comparisons of Elementary School Size of Enrollment and Available Test Factors	71
XXXII	Comparisons of Junior High School Size of Enrollment and Available Test Factors	72

Tables		Page
XXXIII	Comparisons of Senior High School Size of Enrollment and Available Test Factors	73
XXXIV	Elementary School Test Factor Comparisons of Compensatory and Non-Compensatory Schools	75
XXXV	Junior High School Test Factor Comparisons of Compensatory and Non-Compensatory Schools	76
XXXVI	Senior High School Test Factor Comparisons of Compensatory and Non-Compensatory Schools	77

LIST OF FIGURES

Figure		Page
I	Elementary School Total Achievement Ranks 1 - 17	18
II	Elementary School Total Achievement Ranks 18 - 34	19
III	Elementary School Total Achievement Ranks 35 - 51	20
IV	Elementary Schools with High Subject Rank Deviation from Total Achievement	21
V	Elementary Schools Total Academic Aptitude Ranks 1 - 17	25
VI	Elementary Schools Total Academic Aptitude Ranks 18 - 34	26
VII	Elementary Schools Total Academic Aptitude Ranks 35 - 51	27
VIII	Elementary Schools With Total Achievement Rank 2 or More Above Total Aptitude Rank	28
IX	Elementary Schools Having Total Achievement Rank Within 1.5 of Total Aptitude Rank	29
X	Elementary Schools With Total Achievement Rank 2 or More Ranks Below Total Academic Aptitude	30
XI	Junior High School Total Achievement Ranks	34
XII	Junior High School Total Academic Aptitude Rank	35
XIII	Junior High School Total Achievement Rank Compared to Total Academic Ability Rank	36
XIV	Junior High School, Senior High School Attendance Areas	38
XV	Elementary Schools With 40 Percent or More Probationary Teachers	51

Figures		Page
XVI	Elementary Schools With 20 Percent or Less Probationary Teachers	52
XVII	Elementary Schools Having Rank of Total Achievement Above Rank of Probationary Teachers	53
XVIII	Elementary Schools Having Rank of Total Achievement Below Rank of Probationary Teachers	54
XIX	Junior High Schools Rank of Percentage of Probationary Teachers Compared to Rank of Total Achievement	56

INTRODUCTION

Historical Overview

Highly significant developments in the evaluation of education are taking place across the nation. The agenda of educational conferences, action by state legislatures, the Congress and local boards of education, trends in government at all levels, and educational literature indicate definable trends. Several of the new directions are closely related to each other, although each may be considered an independent dimension in itself. All require some major reconsideration of the evaluation procedures used in measurement of educational achievement.

The first major trend is the cost-benefit theory of allocating resources. This concept gained its impetus in the U. S. Defense Department and has spread rapidly across federal agencies, and state and local government. It is expressed generally within the larger concept of program planning and budgeting systems (PPBS). Values also are essential in educational planning; this concept (PPBS) may be extended to visualize a cost-benefit-value structure for a more effective allocation of resources. Benefit, of course, implies meaningful evaluation of program achievement.

Such a meaningful evaluation must be made in terms of accomplishing agreed-upon objectives. Recently, Mager and others have contributed significantly to the research and literature regarding the development of measurable and observable performance objectives for educational behaviors. The trend to define objectives better is clear.

The practice of individualized instruction is gradually taking form in education; it has been a verbalized objective but seldom has been translated into action. Identifying individual needs and progress depends upon evaluation.

Industry is rapidly developing packages of individual learning materials, including sophisticated technology for the educational market it anticipates. An unfortunate correlary of this trend is the potential that such packages have for "de-humanizing" the educational process, principally because such packages relate almost exclusively to the dissemination and feedback of explicit information without the development of real meaning for students.

A further related and significant development in education is the use of electronic data processing for the storage and retrieval of information. One dimension of this development is its general administrative use which includes many school business procedures, attendance and enrollment information, projections for planning, personnel information and almost unlimited supplementary processes to facilitate effective management. A second dimension is computer-assisted instruction which in some school systems is already beyond the theoretical stage.

School personnel are relatively unfamiliar with many of these potent new directions or developments in education. Industry, legislators, systems analysts and researchers are on the "cutting edge" and the uninformed educator could very well be pushed into a state of confusion as new types of demands pass his level of understanding.

Platitudes to the effect that we cannot evaluate such an abstruse process as educational accomplishment will no longer suffice. The activity of the California Legislature in regard to state testing programs is abundant evidence alone that the product of the schools will be subject to increasingly severe judgment, particularly in the face of rising school costs and pressures for tax relief. Evaluation of achievement will be a factor in the determination of state supported programs. The first material assessment of education has been planned and is rapidly being initiated.

Optimum Analysis

In the ideal educational structure of the very near future school programs and activities will be designed to meet specific stated objectives expressed as observable performance behaviors, each having a clear method of evaluation. Varied student needs will be expressed through appropriate objectives. Alternate programs or activities to accomplish any objective will be tested both in terms of cost and effectiveness (achievement). Comparative values will be stated for these objectives and for alternate objectives to allow a realistic system for the establishment of priorities.

Operating in this fashion, any program will have to meet standards of cost-benefit-value to justify its maintenance in the total educational program; proposed innovations would have to pass this test in a pilot phase.

Evaluation will be organized to accommodate the complex social economic and psychological variables of teacher performance, methodology, student background, interests and aptitudes, resources and their utilization within each program.

These are goals toward which planning, research, development and evaluation programs in education are now working; few if any school districts, to our knowledge, have an assessment design which approaches this ideal.

Purpose of the Study

The purpose of this study was to develop an achievement analysis model, and to analyze achievement of students in the Fresno City Schools with reference to potential causal factors influencing achievement.

Procedure

The Project staff researched testing and other data assumed to reflect student achievement. The first area of general analysis was comprised of comparisons among the various achievement and aptitude data available from state and local testing programs. The second general analysis involved pertinent socio-cultural-economic factors and staffing-resource-program components compared with factors of achievement.

It was fully recognized by the staff that some comparisons could prove fruitless and others might imply unwarranted conclusions to which undue and even damaging attention might be paid. This was a risk we felt was justified in the attempt to develop some model for analysis of achievement which would both reveal current educational needs and inspire better analytical models.

We hope the report is read in that spirit and that it may engender positive reaction toward improving the technique for the benefit of the district and its students.

Limitations

The basic measures of achievement available are existing state and local tests. These have two major limitations in that, first, achievement tests are not available or are generaglly not used in all areas of the school curriculum. Second, in areas where achievement tests are available and used, they generally fail to provide any measures for affective learning, a matter of considerable concern in terms of educational objectives. In spite of these limitations, however, tests continue to be used extensively as an evaluative mechanism of school achievement. In recent years the California Legislature has increased this emphasis by mandating certain achievement tests to be administered universally throughout the state with the results to be reported and published. Academic aptitude tests are similarily mandated, and, while reported and published, are often not considered when comparing districts. A more accurate comparison might be a regression analysis, adjusting achievement test results in relation to ability factors prior to reporting and publication.

Recently, recognition has been given to other achievement test data adjustment factors such as socio-economic status (SES)

in the belief that low SES is probably a significant impedance factor on achievement. Mechanics for analyzing this influence on achievement are still being developed; tests now employed still bear the stigma of culture bias.

Delimitations

In order to secure additional information the school district has administered other examinations in addition to state-mandated achievement and ability tests. Such district tests were generally reported on a school-by-school basis; data from the state-mandated tests were usually available only as included within district-wide achievement distributions. In some instances, considerable effort was required to convert state-mandated test data into school-by-school information. Meaningful school-by-school analyses could only be made for the few district tests which had data available.

Comparison of achievement data with other school districts in California would require selection of comparable districts and availablility of identical test data in such districts. Substantial variation exists in terms of school district comparability. For example, similar size districts in California vary widely in the socio-economic composition of students and in expenditure per pupil for education. Such comparisons were thus not possible.

State norms for each state-mandated test are available, but national norms are not. Publisher norms could have been substituted for national norms but were not since most publisher norms depend upon an inadequate sample.

Other data within the district were available for analysis of potential causal factors related to achievement. The use of such data, however, required some generalization. For example, a factor such as low socio-economic status or minority student body population had to be assumed to be constant across all grade levels of a given school. Such delimitations are important in interpreting findings of the study.

PART I: TESTING PROGRAM DATA ANALYSIS

State Mandated Tests

The State of California requires that all children in predetermined grades be given certain aptitude and achievement tests at a specified time during the school year. Reports on testing results are required by the State, and have been released by State officials in spite of strong opposition by various educational organizations and others. Indications are that such testing program results will continue to be published with the probability that factors pertaining to the economic level of each school system will be released at the same time.

District Tests

The Fresno City Unified School District, each year, tests additional grades in both achievement and aptitude to broaden the base of information available to teachers, curriculum and guidance personnel, and school administration.

District Testing Program

Table I portrays the district testing program used for all children in given grades. Test name and form, type of information provided, and whether required by State or district is given for each test. Additional tests used in certain schools or for evaluation of special programs are not listed as part of the district testing program.

Availability of Data

State-mandated test data were compiled for the district and reported, as required, both to the State and to the district Board of Education. Data was available to Project Design only for the district as a whole. Reports to the schools provided individual pupil data, consequently mean scores for state-mandated tests by individual school were not readily available. Project staff obtained school mean scores by a study of IBM reports available in part in the guidance department office and in part in the program evaluation office. Mean school scores for most district required tests were more accessible in these offices, although in one case only the medians were available rather than mean average scores. All data within this report refer to tests administered in October, 1967. Data from additional tests administered in May, 1968 were not available at the time of the study.

Table I

DISTRICT TESTING PROGRAM

Mandated By	Grade	Test	Provides
District	K	Lee-Clark Reading Readiness	Reading Readiness
District	K	Calif. Test Mental Maturity Level O	Academic Aptitude
State	1	Stanford Reading Test, Primary I, Form W	Reading Achievement
State	2	Stanford Reading Test, Primary II, Form W	Reading Achievement
District	3	California Test Mental Maturity Primary	Academic Aptitude
State	3	Stanford Reading Test, Primary II, Form X	Reading Achievement
State	6	Lorge-Thorndike Intelligence Test, Multi-Level Edition, Form I, Level D	Academic Aptitude
State	6	Stanford Achievement, Partial Battery Intermediate II, Form W	Battery Achievement
District	8	California Test Mental Maturity Junior High Level	Academic Aptitude
District	8	California Achievement Test Complete Battery, Junior High Level, Form W	Battery Achievement
District	9	Differential Aptitude Test	Differential Aptitude
District	9	Kuder Preference Record CH	Occupational Interest and Preference
State	10	Lorge-Thorndike Intelligence Multi-Level Edition, Form I, Level G	Academic Aptitude
State	10	Test of Academic Progress, Reading, Form I	Reading Achievement
District	11	Fresno Mathematics Test	Arithmetic Achievement

Test Factors

Most of the tests used in the district testing program are battery tests. Achievement tests usually measure several discrete types of achievement; aptitude tests provided measures of both verbal and non-verbal student potential. For purposes of this analysis, available test data were separated into the discrete factors of aptitude or achievement as they had been measured and tabulated.

Available Test Factors by Grade

Table II lists by grade level the test factors for which data were available. It should be noted that testing at the senior high school level comprises measures of entering 10th grade students only, and as a result provides a much less comprehensive program than at the elementary and junior high levels.

Test Factors Used

Table III identifies test factors which were used in the study. Ten factors pertain to the elementary level, (#1-#10) eight (#11-#18) to the junior high level, and three (#19-#21) to the senior high level. These factor numbers are used throughout the report.

School Mean Raw Scores by Test Factors

Raw mean test scores for each test factor for every elementary, junior high, and senior high school are provided in Tables IV, V, and VI, respectively.

Table II

AVAILABLE TEST FACTORS BY GRADE

	Elementary		Junior High	Senior High
	3	6	8	10
Reading Achievement	1			19
Aptitude	1			
Reading Achievement, Vocabulary		2	17	
Reading Achievement, Comprehension		3	18	
English Achievement, Spelling		4	14	
English Achievement, Language		5		
Math Achievement, Computation		6		
Math Achievement, Concepts		7		
Math Achievement, Application		8		
Aptitude, Verbal		9	11	20
Aptitude, Non-Verbal		10	12	21
English Achievement, Mechanics			13	
Math Achievement, Reasoning			15	
Math Achievement, Fundamentals			16	

Table III

TEST FACTORS USED

Test Factor Number Assigned for This Study	Title of Test	Grade	Date Administered	Number Tested in District	District Mean (When Available)	State Mean 1966-67 (When Available)	Publisher's Mean
1	California Test of Mental Maturity Academic Aptitude	3	9/67	-	105	-	-
	Stanford Achievement Partial Battery Intermediate II, Form W	6	10/67	4145	52.1	52.7	-
2	Reading Achievement, Word				22		
3	Reading Achievement, Paragraph				31		
4	English Achievement, Spelling				27		
5	English Achievement, Language				77		
6	Math Achievement, Computation				14		
7	Math Achievement, Concepts				14		
8	Math Achievement, Application				17		
	Lorge-Thorndike Intelligence Test Multi-Level Edition, Form 1 - Level D	6	10/66	4153	98	99.7	99
9	Academic Aptitude, Verbal		10/67	4239	99		
10	Academic Aptitude, Non-Verbal		10/67	4239	103		
	California Test of Mental Maturity	8	10/67	4177	-	-	101
11	Academic Aptitude, Verbal						
12	Academic Aptitude, Non-Verbal						
	California Achievement Complete Battery High Level - Form W	8	10/67	4177	-	-	-
13	English Achievement, Mech.of English						69
14	English Achievement, Spelling						17
15	Math Achievement, Reasoning						29
16	Math Achievement, Fundamental						50
17	Reading Achievement, Vocabulary						37
18	Reading Achievement, Comprehension						47
	Test of Academic Progress/Reading	10	10/66	3920	32.6	32.0	-
19	Reading Achievement						
	Lorge-Thorndike Intelligence Test Multi-Level Edition, Form 1 - Level G	10	10/66	3902	99.4	100.9	-
20	Academic Aptitude, Verbal						
21	Academic Aptitude, Non-Verbal						

Table IV

ELEMENTARY SCHOOL MEAN RAW SCORES BY TEST FACTORS

	N=	1*	2	3	4	5	6	7	8	9	10
Addams	48	97	15	23	21	67	10	11	12	90	93
Aynesworth	45	92	14	22	19	62	10	9	11	86	90
Baird	104	110	25	35	29	83	15	17	21	103	112
Birney	61	112	21	33	29	80	15	18	18	100	106
Bullard	92	117	24	36	29	85	16	17	21	107	111
Burroughs	114	107	21	31	27	76	13	13	16	97	100
Calwa	88	94	16	23	21	66	11	10	12	88	93
Carver	69	88	14	21	20	61	9	9	11	85	88
Centennial	120	114	25	35	31	85	15	16	19	103	108
Columbia	55	94	12	22	23	63	10	10	10	90	89
Dailey	96	110	26	36	30	84	15	15	19	104	106
Del Mar	75	110	26	37	31	85	15	17	20	106	108
Easterby	133	113	26	37	30	82	15	17	20	106	110
Emerson	27	87	15	21	17	62	10	9	12	85	91
Ericson	50	108	23	34	29	83	14	14	18	101	103
Ewing	105	110	22	31	26	78	12	13	17	100	104
Figarden	10	91	10	13	16	60	7	12	11	84	92
Franklin	108	89	14	19	19	56	9	9	9	84	83
Fremont	54	108	23	31	27	80	13	15	19	100	102
Gibson	124	113	29	41	35	92	21	19	24	111	118
Heaton	68	109	23	30	27	78	14	13	16	100	100
Holland	152	107	22	31	28	78	15	14	17	101	105
Howard	22	110	23	34	28	81	14	15	18	100	108
Jackson	66	98	19	28	24	72	13	12	15	98	95
Jefferson	97	96	15	21	19	60	11	9	11	86	90

Table IV (Cont'd)

		1*	2	3	4	5	6	7	8	9	10
Kirk	54	90	13	20	19	59	9	9	10	84	87
Kratt	46	110	23	31	25	76	14	13	16	101	105
Lafayette	63	109	22	34	29	82	16	15	20	102	108
Lane	131	98	18	29	25	73	13	12	15	95	99
Lincoln	74	89	16	22	22	65	12	10	13	90	93
Lowell	54	95	16	24	20	69	11	11	12	90	94
Malloch	49	107	27	41	35	89	17	18	23	110	113
Manchester	85	111	26	38	32	86	16	17	21	108	114
Mayfair	68	107	21	30	26	75	12	12	16	99	98
Muir	77	103	20	28	26	73	14	13	16	97	100
Norseman	96	108	23	32	26	77	13	14	17	99	103
Powers	57	112	25	36	30	85	17	16	20	103	108
Pyle	109	111	26	36	30	83	15	15	19	106	107
Robinson	89	110	24	36	31	85	16	16	20	104	105
Roeding	73	111	24	34	28	81	16	15	18	104	106
Rowell	87	100	17	25	23	67	12	11	13	91	92
Scandinavian	90	113	24	32	27	83	13	15	18	103	109
Tielman	—	90	27	21	-	-	-	-	-	-	-
Thomas	155	109	26	35	32	86	14	16	19	105	113
Turner	58	111	21	32	26	78	14	14	18	102	106
Viking	71	107	23	33	29	80	13	14	16	100	103
Vinland	103	111	23	33	27	77	13	14	18	102	104
Webster	75	96	15	21	20	63	10	11	11	87	90
Wilson	130	106	20	29	25	71	10	13	16	96	101
Winchell	103	100	20	27	25	71	13	11	15	95	100
Wishon	55	105	25	36	30	86	19	16	20	102	106
Wolters	134	111	26	37	30	86	15	16	21	107	111

* Factor #1 are median scores; mean scores not available.

District 1967-68	4239	105	22	31	27	77	14	14	17	99	103
State 1966-67		-	-	-	-	-	-	-	- Total I.Q. 99.7		
Publisher		-	-	-	-	-	-	-	- Total I.Q. 99.0		

Table V

JUNIOR HIGH SCHOOL MEAN RAW SCORES BY TEST FACTORS

	N=	11	12	13	14	15	16	17	18
Addams	65	92.89	95.14	64.47	16.72	24.30	35.46	36.66	44.15
Ahwahnee	228	107.51	104.75	76.06	19.18	30.74	44.36	42.68	51.69
Cooper	208	101.18	98.94	68.17	17.58	28.91	42.62	38.86	47.20
Ft. Miller	362	103.13	102.12	72.16	18.43	30.10	44.85	39.78	46.44
Hamilton	353	105.92	105.04	72.07	19.08	31.32	50.67	41.11	53.37
Irwin (Edison 9th)	285	84.04	87.15	50.94	13.63	21.34	31.77	26.00	34.26
Kings Canyon	357	104.21	103.73	71.74	19.00	31.41	48.86	41.98	51.00
Sequoia	367	92.08	93.67	60.03	15.13	23.77	37.70	31.46	40.80
Sierra	472	105.53	102.36	75.20	19.40	32.44	51.96	42.40	52.71
Tenaya	351	110.71	106.20	77.25	20.59	34.83	51.58	45.59	58.79
Tioga	383	106.38	101.75	72.11	18.63	32.84	49.73	42.63	52.85
Washington	241	92.25	92.65	59.87	15.34	23.22	35.81	32.98	40.34
Wawona	184	105.80	101.28	73.73	18.98	31.26	51.42	41.95	52.95
Yosemite	321	97.66	94.90	67.31	17.45	27.17	43.17	36.72	45.10
N=	4177								
Publisher's Norms = $\frac{\#11 + \#12}{2}$ = Total I.Q.=		101		69	17	29	50	37	47

Table VI

SENIOR HIGH SCHOOL MEAN RAW SCORES BY TEST FACTORS

	N=	19	20	21
Bullard	469	37	105	109
Edison	226	18	82	87
Fresno	798	33	100	104
Hoover	644	37	104	108
McLane	954	33	101	105
Roosevelt	852	29	93	97
Dist. 67 - 68	3,993	31.99	97.70	101.76
Dist. 66 - 67	3,920	32.6	99.4	
State 66 - 67	-	32.0	100.9 Non-weighted average of verbal and non-verbal (factors #20 and #21)	

Elementary School Achievement Ranks

Table VII reports achievement data from test factors 2 through 8 in the elementary schools. Mean raw scores for reading factors 2 and 3 were combined for each elementary school. The 51 schools were then assigned rank according to this combined reading index. The highest achieving school in reading was indicated as rank number 1. Two or more schools with equal total reading indexes were assigned the average of the ranks they represented. For example, two schools which had equal indexes for rank 4 would each recieve rank number 4.5, (the average of rank numbers 4 and 5). The next high index would then receive rank number 6. Should three schools tie for rank number 4 each would be placed at rank number 5 (the average for ranks 4, 5 and 6), with the next school given rank number 7.

English achievement was also available as two factors (4 and 5). Again, school mean raw scores were summed and ranks were assigned each school according to this index of English achievement. The three mathematics factors (6, 7 and 8) were treated in the same way, providing a ranking of schools according to mathematics achievement.

The next double column in Table VII represents total achievement. First, all achievement factors (2 through 8) were summed. The schools were then ranked according to this index of total achievement.

The range of school rank variation among the three subject achievement ranks (reading, English, mathematics) is reported in the next column.

The final (triple) column of Table VII indicates deviation in school rank between each of the three subject areas and the total achievement rank.

Bullard Elementary School may be used as an example to interpret Table VII. It was found that the total of two reading scores produced an index of 60 points, equal to 13.5 rank among the elementary schools. This same rank was shared by Baird, Centennial and Robinson Schools, each receiving 13.5 as the average of ranks 12, 13, 14 and 15. In English, the combined index for Bullard was 114, placing this school in rank 11.5. The Bullard mathematics index of 54 matched Manchester school, resulting in rank number 4.5 for each. When all achievement scores were added, Bullard attained an index of 228 which placed this school in rank 9 for overall achievement.

Subject achievement school ranks at Bullard varied from a low of 13.5 in reading to a high of rank 4.5 in mathematics, a difference or range of 9 ranks as noted in the next column. Relating each subject rank for the school to its total achievement rank, it may be noted that Bullard was -4.5 in reading achievement, -2.5 in English achievement and +4.5 in mathematics.

In most cases (113 of 153) the total achievement rank is within 2.5 ranks of the achievement in specific subject areas. It may be of interest to note the range of ranks indicated. This range of achievement ranks varies from 0 at Gibson, Malloch and Rowell to 12 at Thomas which ranks 3.5 in English achievement but 15.5 in mathematics.

Table VII

ELEMENTARY SCHOOL ACHIEVEMENT RANKS

	READING ACHIEV. (R) Test Factors		ENGLISH ACHIEV.(E) Test Factors		MATH ACHIEV.(M) Test Factors		TOTAL ACHIEVEMENT Sum of Factors (Col.		RANGE OF ACHIEV.	SUBJECT RANK DIFFERENCE FROM TOTAL SCHOOL ACHIEVEMENT		
	2+3	Rank	4+5	Rank	6+7+8	Rank	1+2+3)	Rank	RANKS	(R)	(E)	(M)
Addams	38	45.5	88	40	33	41.5	159	41.5	5.5	-4.0	1.5	-
Aynesworth	36	42.5	79	47	30	47	145	47.5	4.5	5.0	0.5	0.5
Baird	60	13.5	112	15	53	6.5	225	13.5	8.5	-	-1.5	7.0
Birney	54	25	109	20.5	46	22	209	21	4.5	-4.0	0.5	-1.0
Bullard	60	13.5	114	11.5	54	4.5	228	9	9	-4.5	-2.5	4.5
Burroughs	52	31	103	29.5	42	31.5	197	31	2	-	1.5	-0.5
Calwa	39	40	87	41.5	33	41.5	159	41.5	1.5	1.5	-	-
Carver	35	47	81	45	29	49	145	47.5	2	0.5	2.5	-1.5
Centennial	60	13.5	116	7	50	13	226	12	6.5	-1.5	5.0	-1.0
Columbia	34	48	86	43	30	47	150	44	5	-4.0	1.0	-3.0
Dailey	62	7.5	114	11.5	49	15.5	225	13.5	8	6.0	2.0	-2.0
Del Mar	63	5	116	7	52	12	231	5.5	7	0.5	-1.5	-6.5
Easterby	63	5	112	15	52	12	227	11	10	6.0	-4.0	-1.0
Emerson	36	42.5	79	47	31	44.5	146	45.5	4.5	3.0	-1.5	1.0
Ericson	57	17.5	112	15	46	22	215	18	7	0.5	3.0	-4.0
Ewing	53	28.5	104	27	42	31.5	199	29	4.5	0.5	2.0	-2.5
Figarden	23	51	76	50	30	47	129	51	4	-	1.0	4.0
Franklin	33	49.5	75	51	27	51	135	50	1.5	0.5	-1.0	-1.0
Fremont	54	25	107	23	47	18.5	208	22.5	6.5	-2.5	-0.5	4.0
Gibson	70	1	127	1	64	1	261	1	0	-	-	-
Heaton	53	28.5	105	25	43	28.5	201	28	2.5	-0.5	3.0	-0.5
Holland	53	28.5	106	24	46	22	205	24.5	6.5	-4.0	0.5	2.5
Homan	57	17.5	109	20.5	47	18.5	213	19	3	1.5	-1.5	0.5
Jackson	47	36	96	35.5	40	34	183	36	2	-	0.5	2.0

Table VII (continued)

	(R)		(E)		(M)		TOTAL		RANGE	TOTAL SCHOOL		
	2+3	Rank	4+5	Rank	6+7+8	Rank	1+2+3	Rank	RANKS	(R)	(E)	(M)
Jefferson	36	42.5	79	47	31	44.5	146	45.5	4.5	3.0	-1.5	1.0
Kirk	33	49.5	78	49	28	50	139	49	1	-0.5	-1.0	-
Kratt	54	25	101	31.5	43	28.5	198	30	6.5	5.0	-1.5	1.5
Lafayette	56	20.5	111	17	51	12	218	16	7.5	-4.5	-1.0	4.0
Lane	47	36	98	34	40	34	185	34	2	-2.0	-	-
Lincoln	38	45.5	87	41.5	35	39	160	40	6.5	-5.5	-1.5	1.0
Lowell	40	39	89	39	34	40	163	39	1	-	-	-1.0
Malloch	68	2	124	2	58	2	250	2	0	-	-	-
Manchester	64	3	118	3.5	54	4.5	236	3	1.5	-	-0.5	-1.5
Mayfair	51	32	101	31.5	40	34	192	32	2	-	0.5	-2.0
Muir	48	34	99	33	43	28.5	190	33	5.5	-1.0	-	4.5
Norseman	55	23	103	29.5	44	26	202	27	6.5	4.0	-2.5	1.0
Powers	61	10	115	10	53	6.5	229	7	3.5	-3.0	-3.0	0.5
Pyle	62	7.5	113	13	49	15.5	224	15	8	7.5	2.0	-0.5
Robinson	60	13.5	116	7	52	9.5	228	9	6.5	-4.5	2.0	.5
Roeding	58	16	109	20.5	49	15.5	216	17	5	1.0	-3.5	1.5
Rowell	42	38	90	38	36	38	168	38	0	-	-	-
Scandinavian	56	20.5	110	18	46	22	212	20	4	-0.5	2.0	-2.0
Tielman	48	34	-	-	-	-	-	-	-	-	-	-
Thomas	61	10	118	3.5	49	15.5	228	9	12	-1.0	5.5	-6.5
Turner	53	28.5	104	27	46	22	203	26	6.5	-2.5	-1.0	4.0
Viking	56	20.5	109	20.5	43	28.5	208	22.5	8	2.0	2.0	-6.0
Vinland	56	20.5	104	27	45	25	205	24.5	6.5	4.0	-2.5	-0.5
Webster	36	42.5	83	44	32	43	151	43	1.5	0.5	-1.0	-
Wilson	49	33	96	35.5	39	36.5	184	35	3.5	2.0	-0.5	-1.5
Winchell	47	36	96	35.5	39	36.5	182	37	1.5	1.0	1.5	0.5
Wishon	61	10	116	7	55	3	232	4	7	-6.0	-3.0	1.0
Wolters	63	5	116	7	52	9.5	231	5.5	4.5	0.5	-1.5	-4.0

Geographical Distribution of Achievement Ranks

Total school achievement ranks were analyzed in terms of geographical distribution. The 51 elementary schools for which data was available (Tielman omitted) are divided into three groups of 17 schools each. Figure I shows the location of schools ranking 1 through 17 in total achievement, Figure II shows those schools ranking 18 through 34, and Figure III shows schools ranking 35 through 51. It may be observed in Figure I that top ranking schools are fairly well clustered in the north while Figure III illustrates the grouping of low ranking schools in the central city and western sectors of the district.

When wide variation from total achievement exists in subject achievement (over three ranks) it is most apt to occur in reading, 19 times; and least apt to occur in English, 8 times.

Geographical Distribution of Schools With 3 or More Subject Ranks Deviation from Total Achievement Rank.

Figure IV shows the location of schools having a range of 3 or more subject ranks from total achievement rank, and identified subject areas with high variation. Schools numbered 5, 10, 12, 19, and 27 are examples which are high in one achievement area and low in another as compared to their total achievement rank. There does not appear to be a fixed pattern throughout the district for schools with either high or low subject achievement rank compared to total achievement rank.

Elementary Academic Aptitude

In Table VIII mean raw scores by school for academic aptitude factors 1, 9 and 10 have been combined to form school aptitude indexes. Schools were then ranked according to aptitude indexes in the same manner as was done for achievement. The total achievement rank of each school (Table VII) is next displayed. Finally, Table VIII shows the variation in achievement rank as compared with aptitude rank for each elementary school. Schools with achievement rank exceeding aptitude rank have a positive rank difference; schools with lower achievement than aptitude rank have a negative rank difference. For example, the three mean test scores represented by factors 1, 9 and 10 were combined for Robinson School to produce an index of 319. Compared to the total academic aptitude indexes for other schools Robinson was ranked 16th, or was the sixteenth highest school in potential for achievement in terms of the measures employed. Achievement rank at Robinson School, as reported in Table VII, was rank 9. Thus, students at this school, according to the data available for those tested, appear to exceed their potential by 7 school ranks. The last column permits similar examination of the achievement of each school in relation to its academic aptitude.

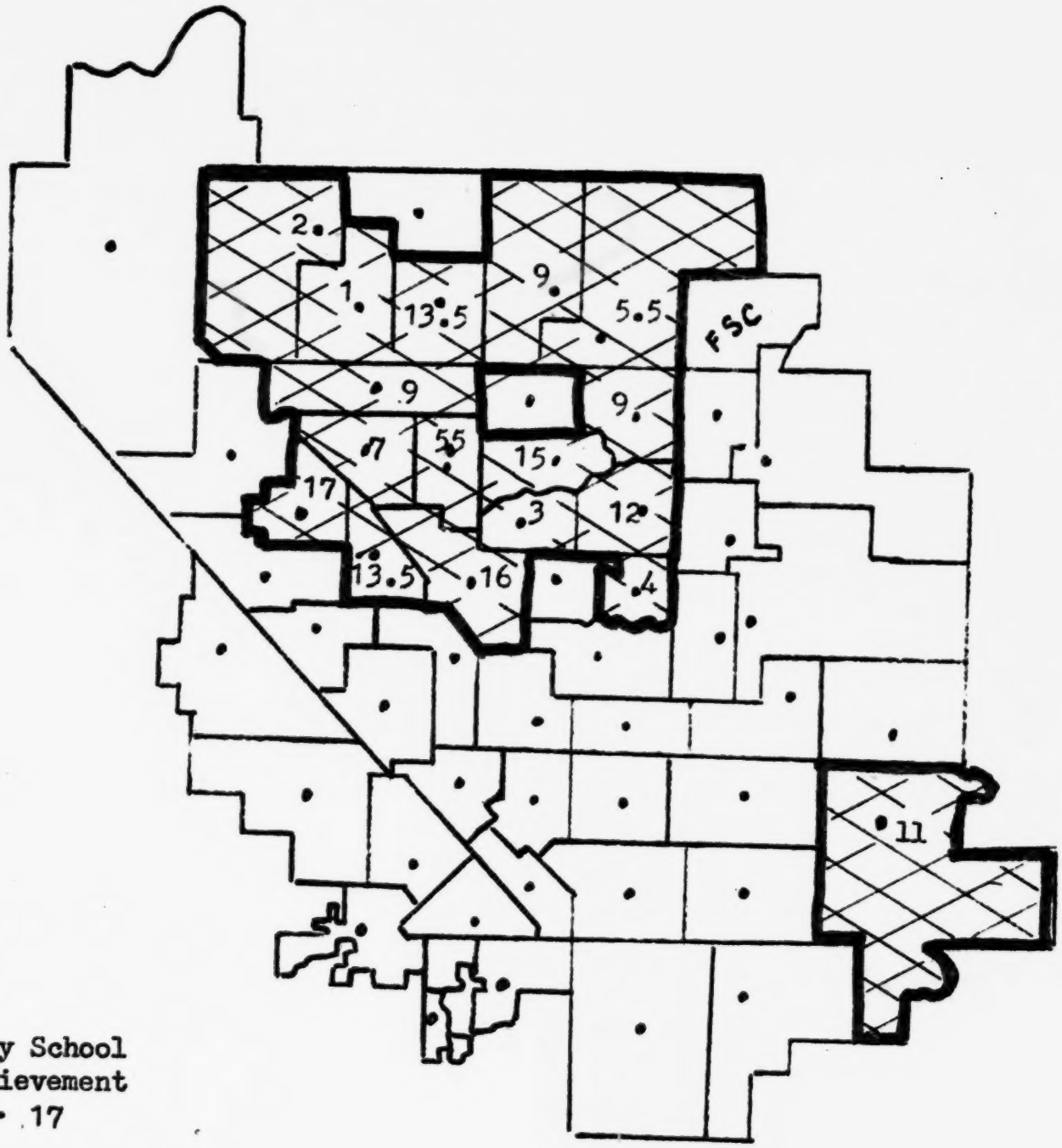


Figure I

Elementary School
Total Achievement
Ranks 1 - 17

1 Gibson	9 Robinson	15 Pyle
2 Malloch	9 Bullard	16 Lafayette
3 Manchester	9 Thomas	17 Roeding
4 Wishon	11 Easterby	
5.5 Del Mar	12 Centennial	
5.5 Wolters	13.5 Baird	
7 Powers	13.5 Daily	

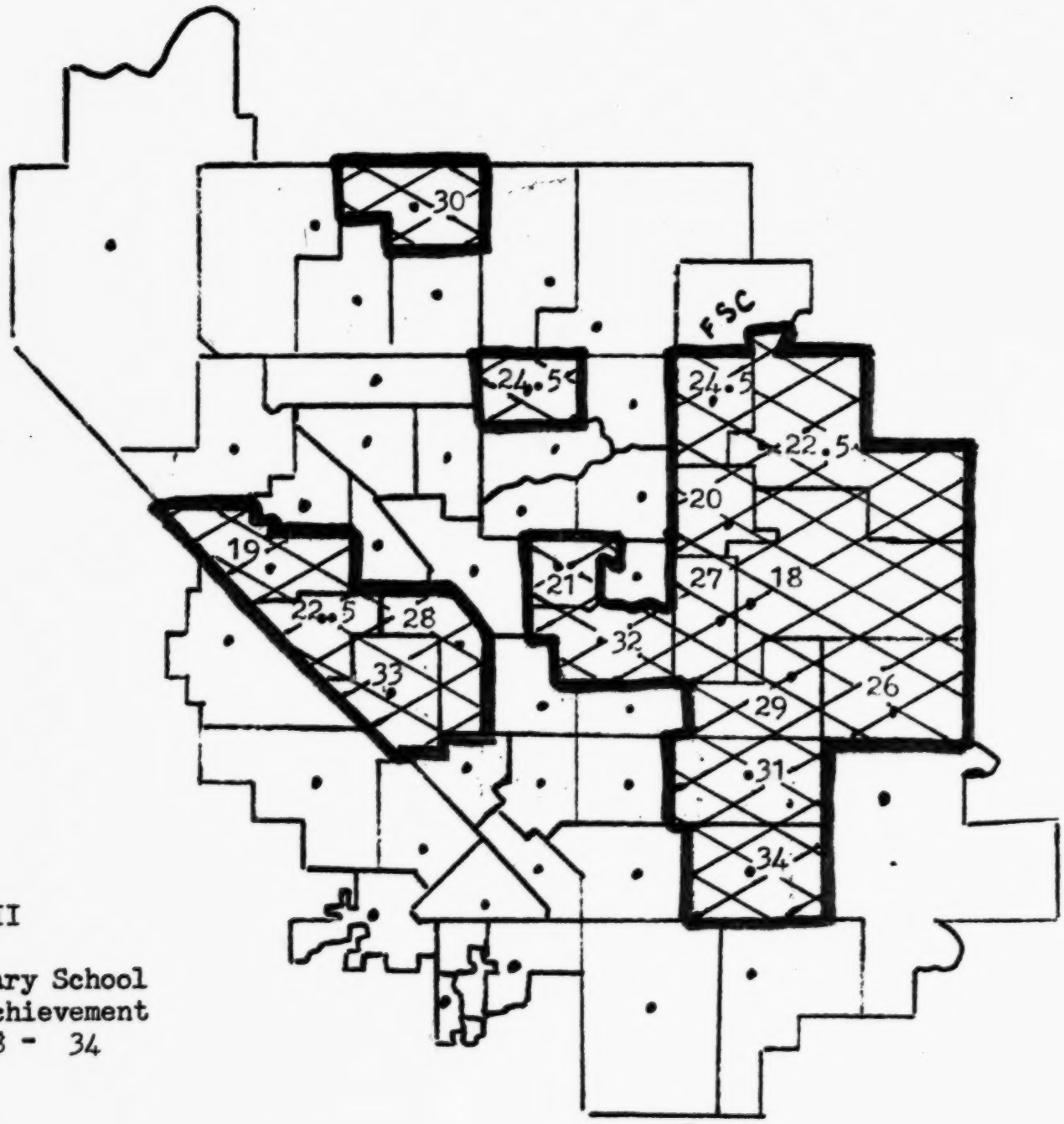


Figure II

Elementary School
Total Achievement
Ranks 18 - 34

18 Ericson
19 Homan
20 Scandinavian
21 Birney
22.5 Fremont
22.5 Viking
24.5 Holland
24.5 Vinland
26 Turner
27 Norseman
28 Heaton
29 Ewing
30 Kratt
31 Burroughs
32 Mayfair
33 Muir
34 Lane

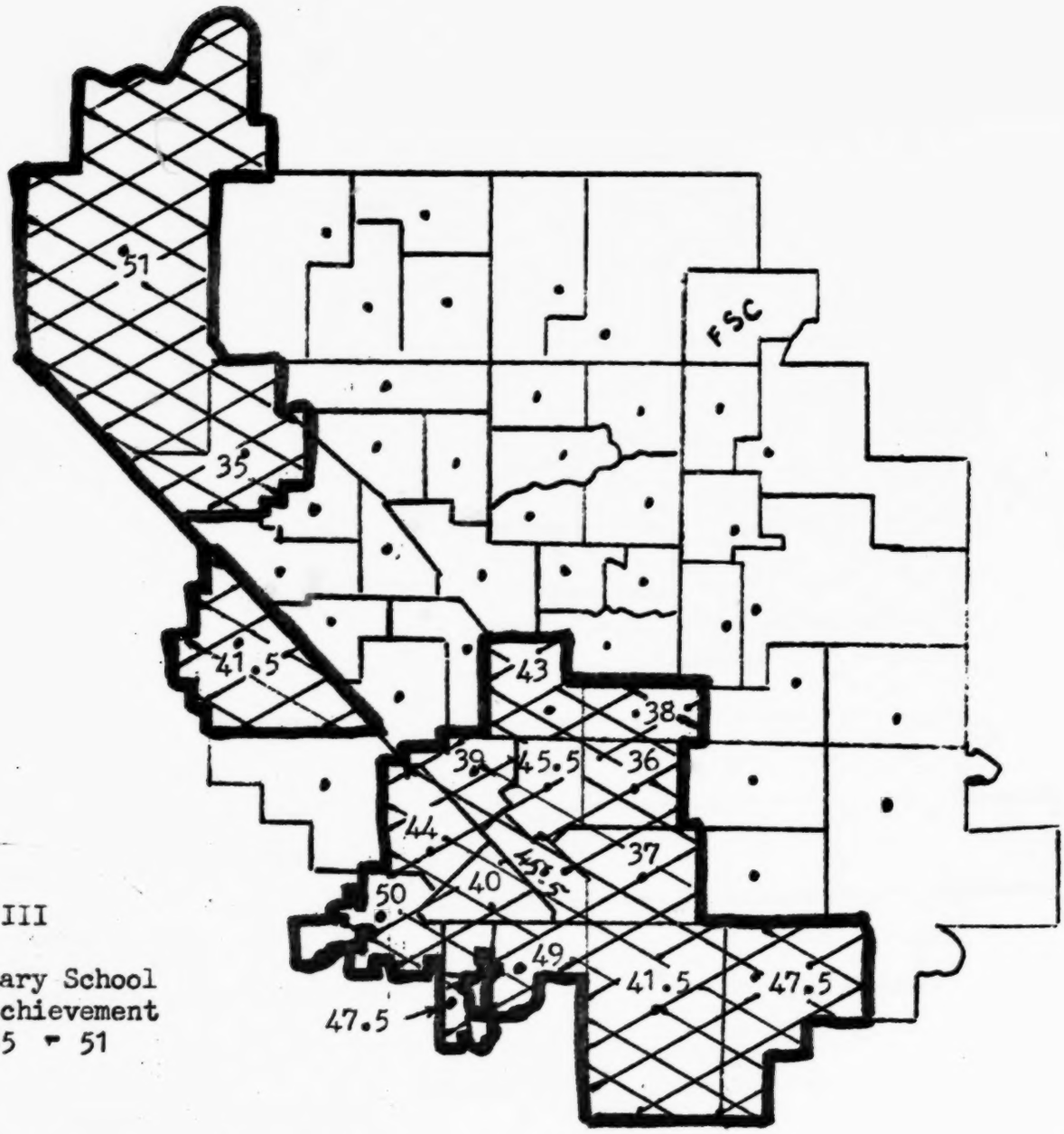


Figure III

Elementary School
Total Achievement
Ranks 35 - 51

35 Wilson	41.5 Calwa	49 Kirk
36 Jackson	43 Webster	50 Franklin
37 Winchell	44 Columbia	51 Figarden
38 Rowell	45.5 Emerson	
39 Lowell	45.5 Jefferson	
40 Lincoln	47.5 Aynesworth	
41.5 Addams	47.5 Carver	

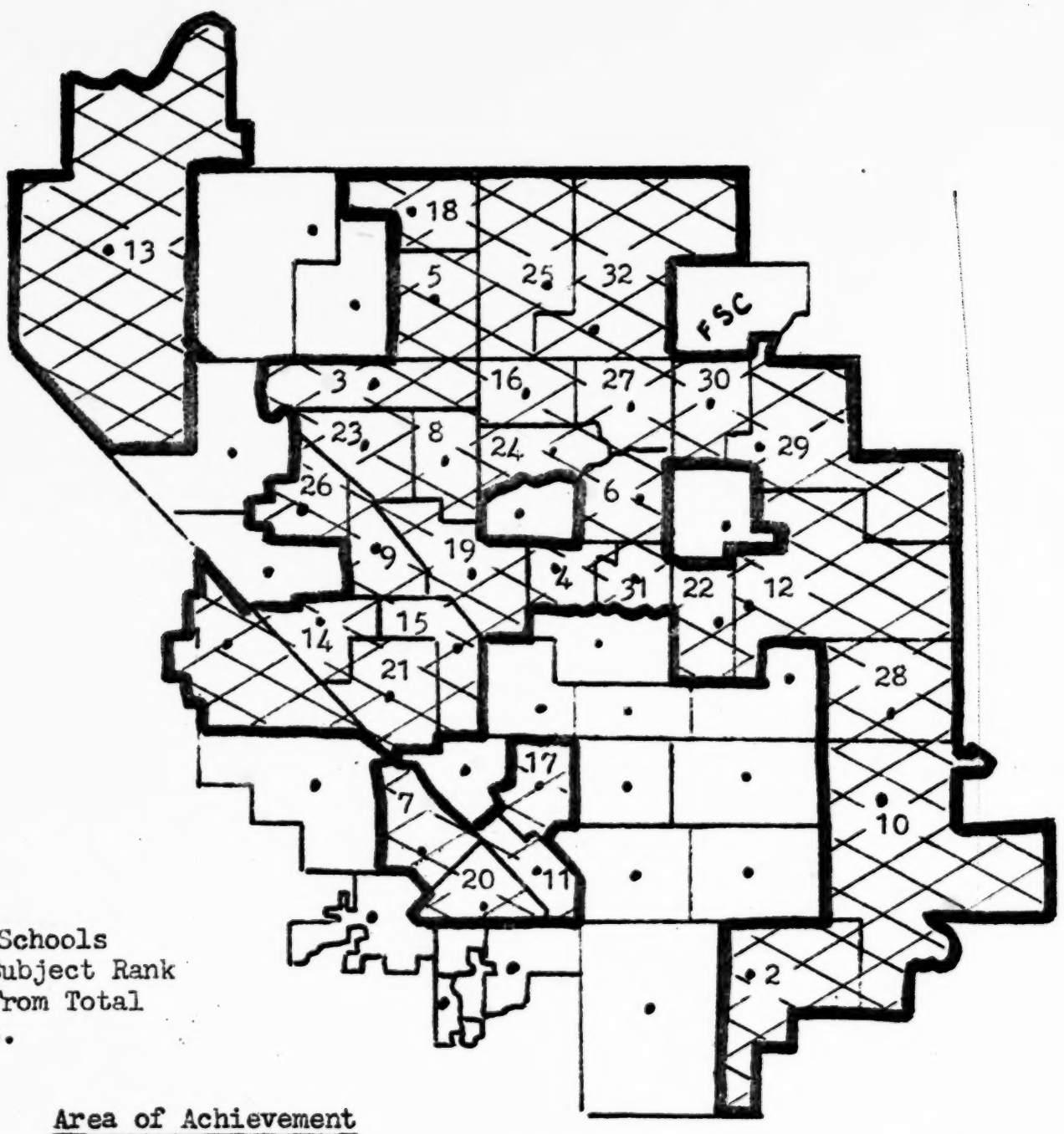


Figure IV

Elementary Schools
With High Subject Rank
Deviation From Total
Achievement.

	School	Area of Achievement	
1	Addams	Reading	-4
2	Aynesworth	Reading	+5
3	Baird	Math	+7
4	Birney	Reading	-4
5	Bullard	Reading	-4.5
		Math	+4.5
6	Centennial	English	+5
7	Columbia	Reading	-4
8	Dailey	Reading	+6
9	Del Mar	Math	-6.5
10	Easterby	Reading	+6
		English	-4
11	Emerson	Reading	+3
12	Ericson	English	+3
		Math	-4
13	Figarden	Math	+4
14	Fremont	Math	+4
15	Heaton	English	+3
16	Holland	Reading	-4
17	Jefferson	Reading	+3
18	Kratt	Reading	+5
19	Lafayette	Reading	-4.5
		Math	+4
20	Lincoln	Reading	-5.5
21	Muir	Math	+4.5
22	Norseman	Reading	+4
23	Powers	Reading	-3
		English	-3
24	Pyle	Reading	+7.5
25	Robinson	Reading	-4.5
26	Roeding	English	-3.5
27	Thomas	English	+5.5
		Math	-6.5
28	Turner	Math	+4
29	Viking	Math	-6
30	Vinland	Reading	+4
31	Wishon	Reading	-6
32	Wolters	Math	-4

Table VIII

ELEMENTARY SCHOOL ACADEMIC APTITUDE
RANK IN FRESNO COMPARED TO ACHIEVEMENT

	TOTAL ACADEMIC APTITUDE		TOTAL ACHIEVEMENT RANK	APTITUDE ACHIEVEMENT RANK DIFFERENCE
	Test Factors 1 + 9 + 10	Rank	Table VII	
Addams	280	38	41.5	-3.5
Aynesworth	268	46	47.5	-1.5
Baird	325	9	13.5	-4.5
Birney	273	43	21	+22
Bullard	335	2	9	-7
Burroughs	304	29.5	31	-1.5
Calwa	275	40	41.5	-1.5
Carver	261	49.5	47.5	-1.5
Centennial	325	9	12	-3
Columbia	273	43	44	-1
Dailey	320	14	13.5	+ .5
Del Mar	291	35.5	5.5	+30
Easterby	329	5.5	11	-5.5
Emerson	263	48	45.5	+2.5
Ericson	312	25	18	+7
Ewing	314	22	29	-7
Figarden	267	47	51	-4
Franklin	256	51	50	+1
Fremont	317	19.5	22.5	-3
Gibson	342	1	1	0
Heaton	309	28	28	0
Holland	313	23.5	24.5	-1
Homan	318	18	19	-1
Jackson	291	35.5	36	- .5

Table VIII (Cont'd)

	TOTAL ACADEMIC APTITUDE		TOTAL ACHIEVEMENT RANK	APTITUDE ACHIEVEMENT RANK DIFFERENCE
Jefferson	272	44.5	45.5	-1
Kirk	261	49.5	49	+.5
Kratt	316	21	30	-9
Lafayette	319	16	16	0
Lane	292	34	34	0
Lincoln	272	44.6	40	+4.5
Lowell	279	39	39	0
Malloch	330	4	2	+2
Manchester	333	3	3	0
Mayfair	304	29.5	32	-2.5
Muir	300	32	33	-1
Norseman	310	26.5	27	-.5
Powers	323	12	7	+5
Pyle	324	11	15	-4
Robinson	319	16	9	+7
Roeding	321	13	17	-4
Rowell	283	37	38	-1
Scandinavian	325	9	20	-11
Tielman	-	-	-	-
Thomas	327	7	9	-2
Turner	319	16	26	-10
Viking	310	26.5	22.5	+4
Vinland	317	19.5	24.5	-5
Webster	273	43	43	0
Wilson	303	31	35	-4
Winchell	295	33	37	-4
Wishon	313	23.5	4	+19.5
Wolters	329	5.5	5.5	0

Geographical Distribution Analysis of Achievement Aptitude Ranks

As with total achievement ranks, a series of figures were drawn to display total academic aptitude rank geographically for the district. Figure V shows the location of schools ranking 1 through 17 in academic aptitude, Figure VI those ranking 18 through 34, and Figure VII those ranking 35 through 51. It may be noted by comparing these figures with Figures I, II and III that academic aptitude and total achievement appear to be highly correlated.

Further analysis was made of the relationship of achievement to aptitude by separating schools into groups which appeared to overachieve, normally achieve, or underachieve. Figure VIII illustrates schools in which achievement was two or more ranks above aptitude. Figure IX illustrates those schools in which achievement is within 1.5 ranks of aptitude; and Figure X those schools where achievement fell two or more ranks below aptitude. This analysis tends to indicate that some schools with comparatively high ranks of both aptitude and achievement (Baird or Easterby) are achieving below their apparent aptitudes, while other schools like Lincoln and Kirk, having both low aptitude and achievement ranks appear to be overachieving. Most schools, show a close relationship between aptitude and achievement. Most dramatic deviants, however, were Del Mar, Birney and Wishon which are, respectively, demonstrating achievement rank over aptitude rank of 30, 22 and 19.5.

Junior High School Achievement Rank

Table IX presents data on achievement as measured by test factors 13 through 18 in the junior high schools. Achievement for the areas of English, math and reading are given separately in the first three columns. An achievement index for each school was next determined by combining the three individual achievement scores into the next column. In addition to the test factors taken from Table V, each column shows the rank of that junior high school on a scale of 1 through 14.

Junior High School Academic Aptitude Rank Compared to Achievement

Table X indicates the academic aptitude for each junior high school by combining test factors 11 and 12 from Table V. The academic aptitude for each junior high school is then ranked from 1 through 14. The total achievement for each junior high school as determined in Table IX is repeated in the next column. This makes it possible to examine each school's total achievement in terms of the schools indicated academic aptitude. This comparison is made in the final, column where the rank of total achievement in terms of the schools indicated academic aptitude. This comparison is made in the final column where the rank of total achievement is subtracted from the rank of total academic aptitude giving the number of ranks above or below what a school could be expected to achieve because of its tested academic aptitude.

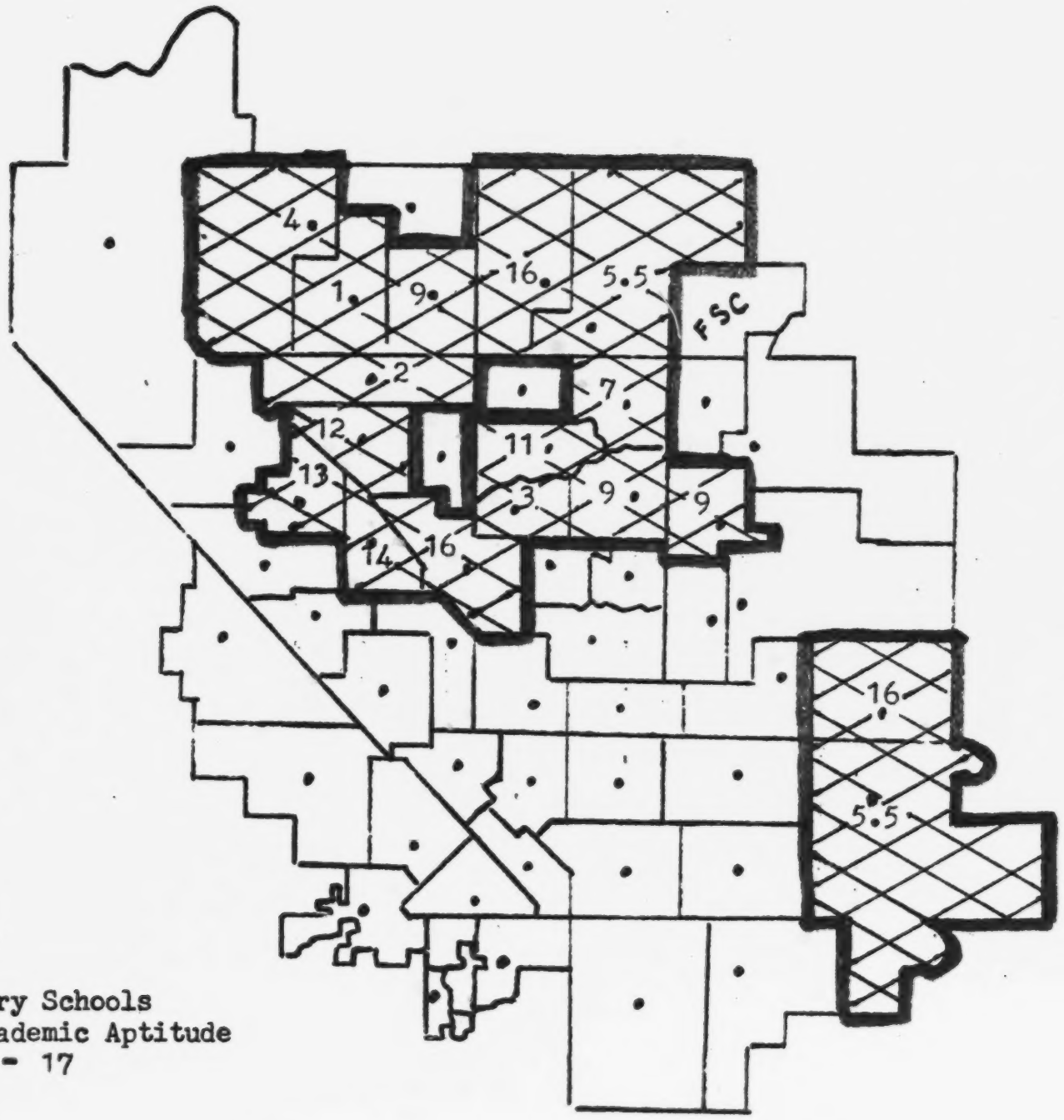


Figure V

Elementary Schools
Total Academic Aptitude
Ranks 1 - 17

1 Gibson	9 Baird	16 Lafayette
2 Bullard	9 Centennial	16 Robinson
3 Manchester	9 Scandinavian	16 Turner
4 Malloch	11 Pyle	
5.5 Easterby	12 Powers	
5.5 Wolters	13 Roeding	
7 Thomas	14 Daily	

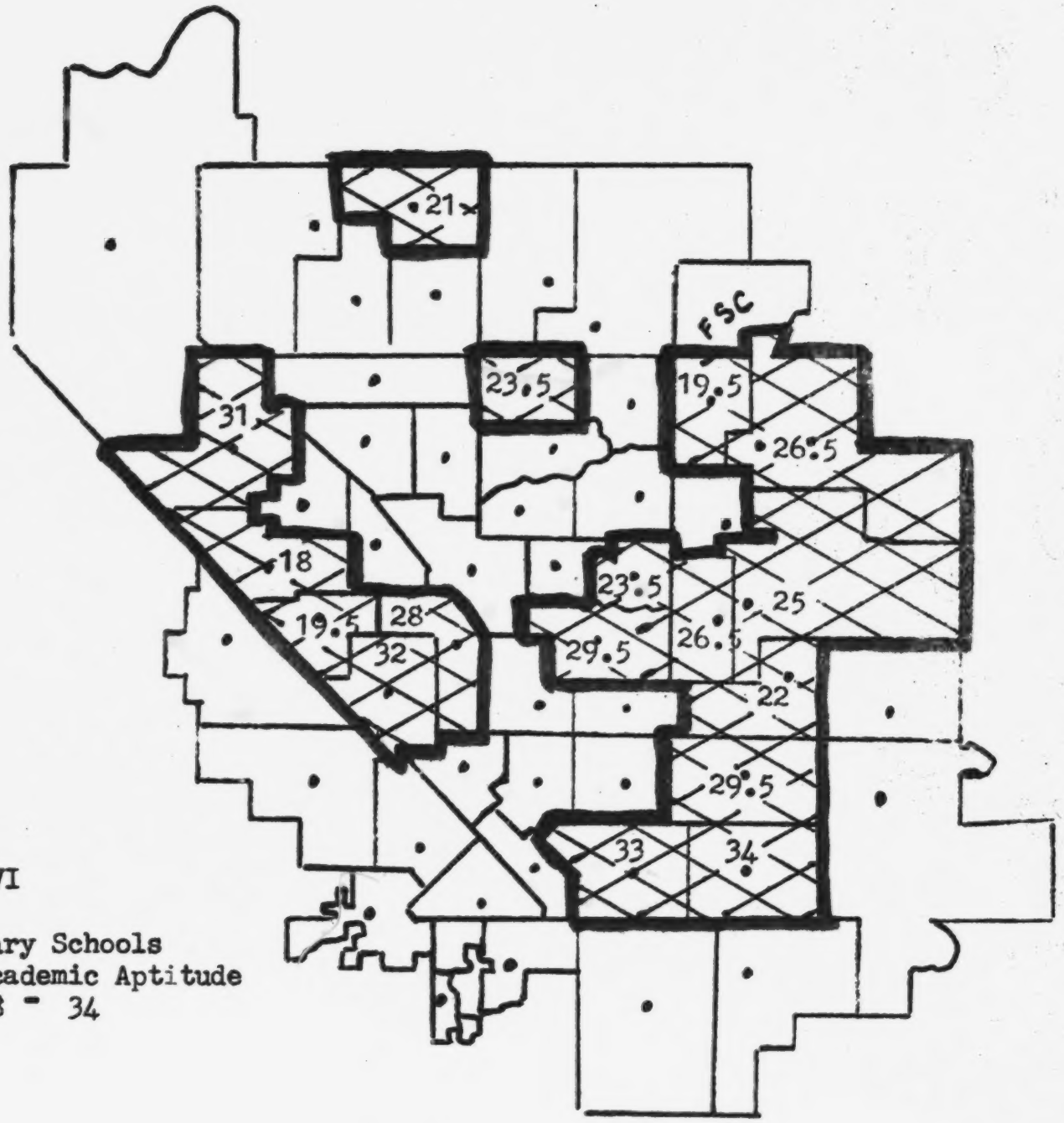


Figure VI

Elementary Schools
Total Academic Aptitude
Ranks 18 - 34

18 Homan	25 Ericson	32 Muir
19.5 Fremont	26.5 Norseman	33 Winchell
19.5 Vinland	26.5 Viking	34 Lane
21 Kratt	28 Heaton	
22 Ewing	29.5 Burroughs	
23.5 Holland	29.5 Mayfair	
23.5 Wishon	31 Wilson	

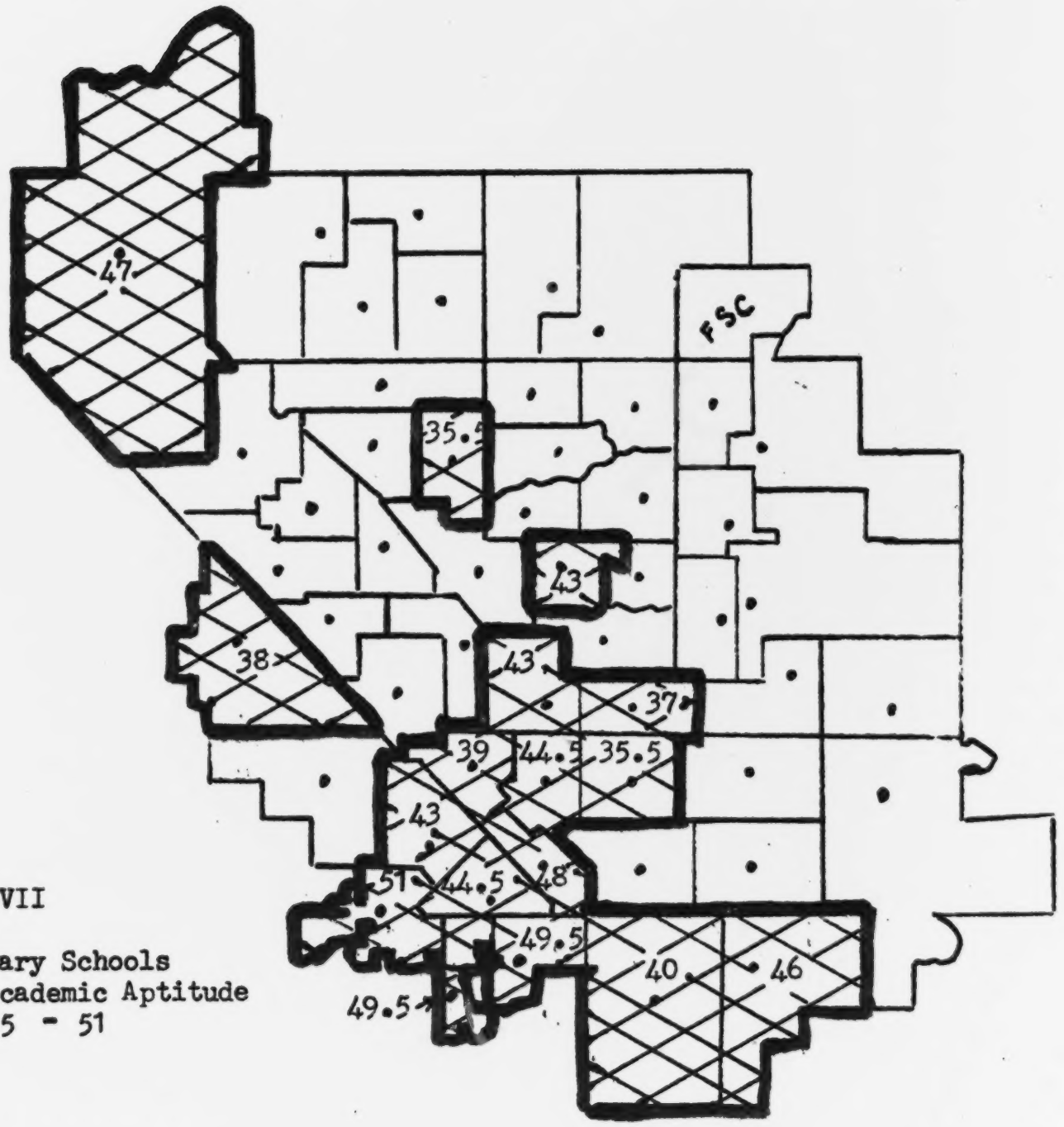


Figure VII

Elementary Schools
Total Academic Aptitude
Ranks 35 - 51

35.5 Del Mar
35.5 Jackson
37 Rowell
38 Addams
39 Lowell
40 Calwa
43 Birney
43 Columbia
43 Webster
44.5 Jefferson
44.5 Lincoln
46 Aynesworth
47 Figarden
48 Emerson
49.5 Carver
49.5 Kirk
51 Franklin

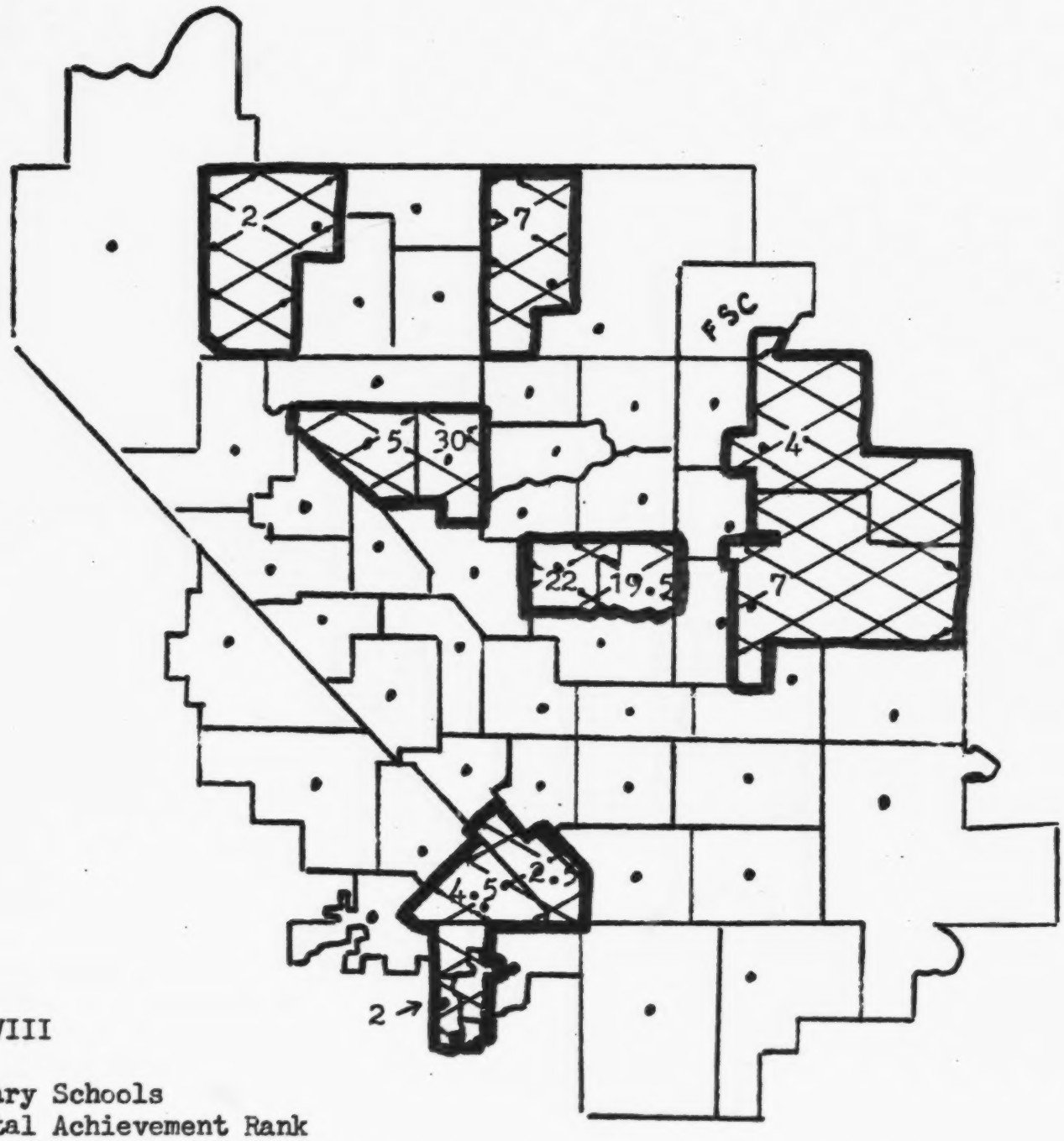


Figure VIII

Elementary Schools
With Total Achievement Rank
2 or More Above Total
Aptitude Rank

+	30 Del Mar	+	4.5 Lincoln
+	22 Birney	+	4 Viking
+	19.5 Wishon	+	2.5 Emerson
+	7 Ericson	+	2 Malloch
+	7 Robinson	+	2 Carver
+	5 Powers		

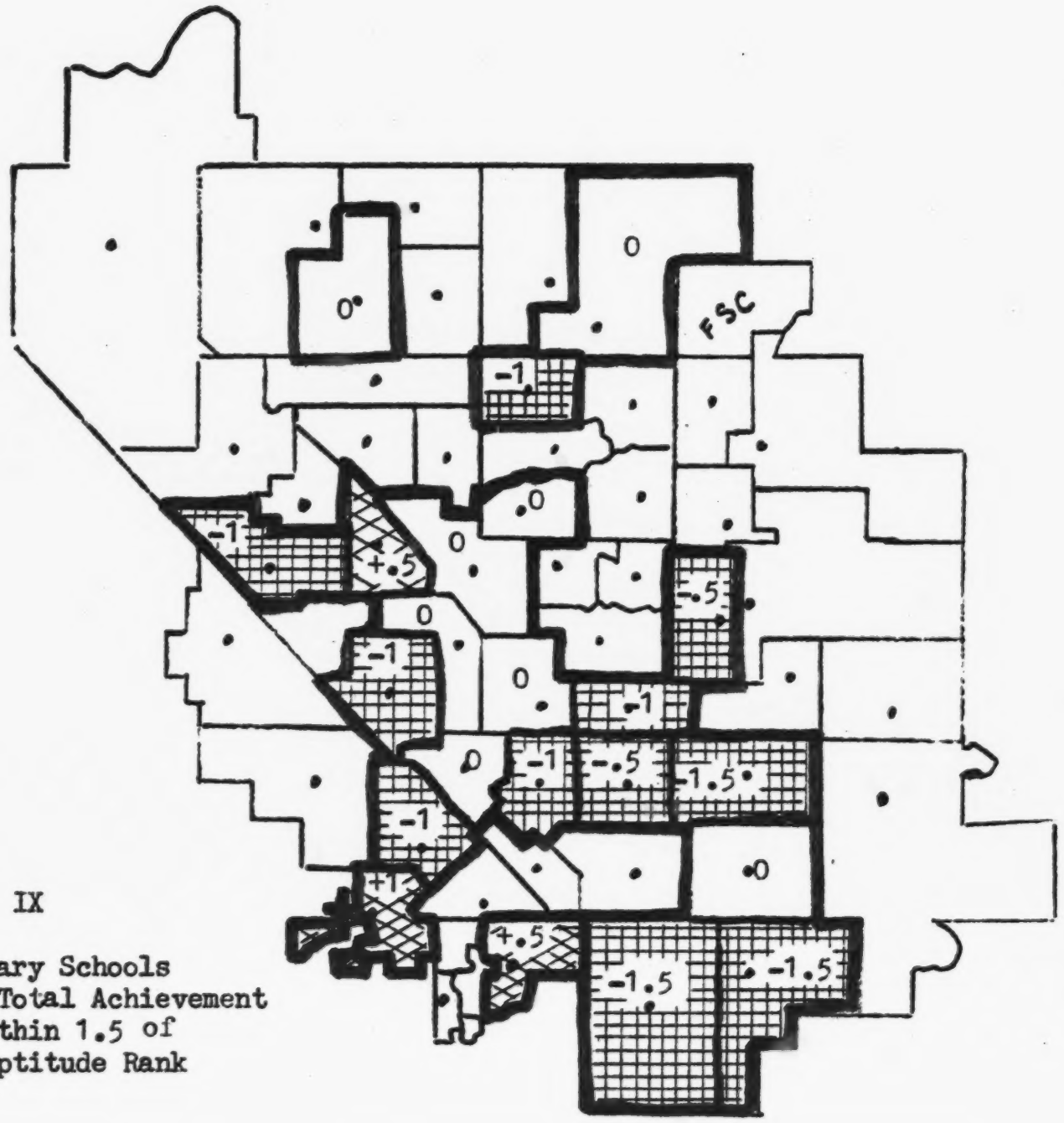


Figure IX

Elementary Schools
Having Total Achievement
Rank Within 1.5 of
Total Aptitude Rank

Above	Same	Below		
+ 1 Franklin	Gibson	- .5 Jackson	- 1 Muir	
+ .5 Dailey	Heaton	- .5 Norseman	- 1 Rowell	
+ .5 Kirk	Lafayette	- 1 Columbia	- 1.5 Aynesworth	
	Lane	- 1 Holland	- 1.5 Burroughs	
	Lowell	- 1 Homan	- 1.5 Calwa	
	Manchester			
	Webster			
	Wolters			

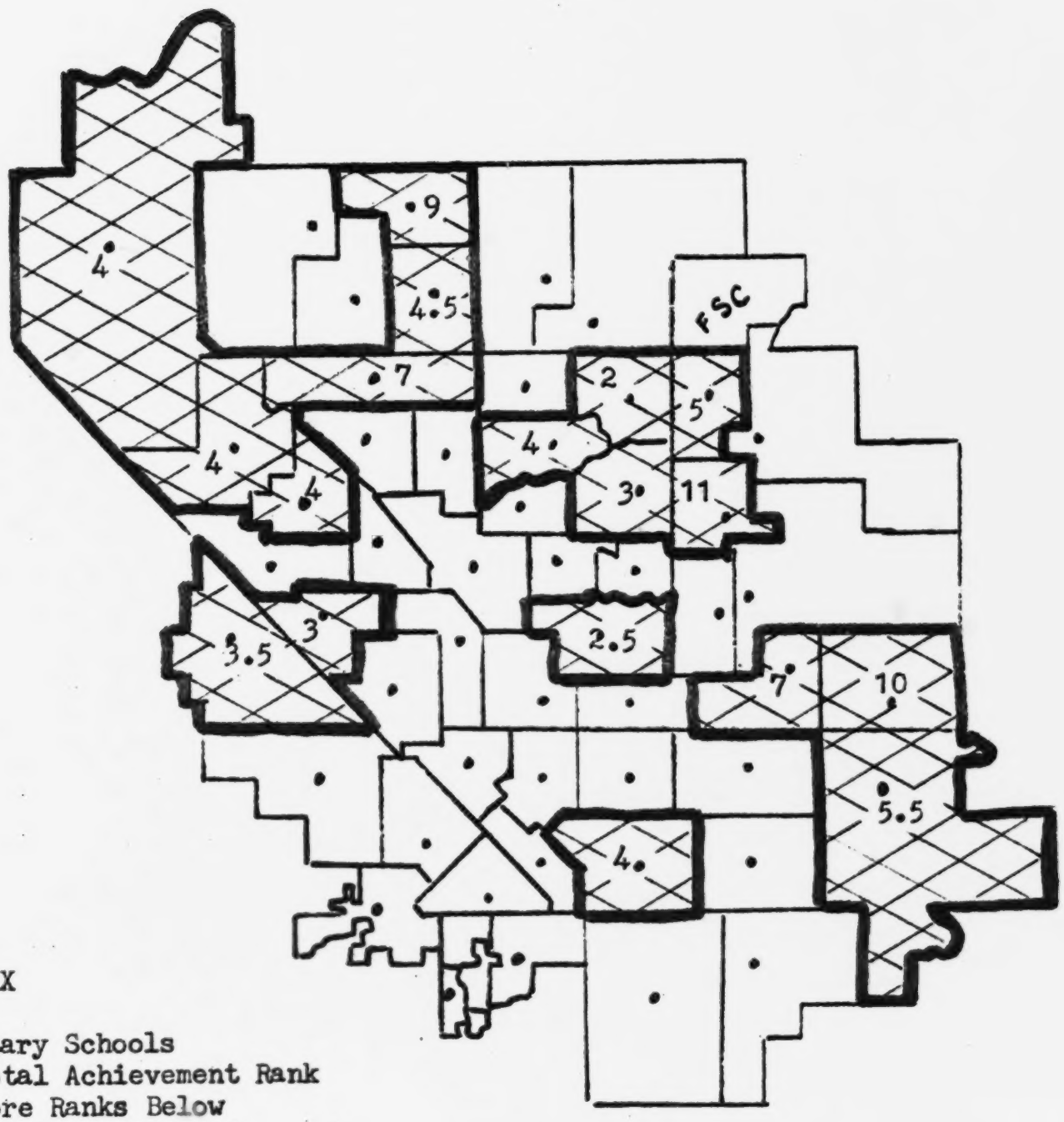


Figure X

Elementary Schools
With Total Achievement Rank
2 or More Ranks Below
Total Academic Aptitude

- 2 Thomas
- 2.5 Mayfair
- 3 Centennial
- 3 Fremont
- 3.5 Addams
- 4 Figarden
- 4 Pyle
- 4 Roeding
- 4 Wilson
- 4 Winchell
- 4.5 Baird
- 5 Vinland
- 5.5 Easterby
- 7 Bullard
- 7 Ewing
- 9 Kratt
- 10 Turner
- 11 Scandinavian

Table IX

JUNIOR HIGH SCHOOL ACHIEVEMENT RANK

School	English Achiev.		Math Achiev.		Reading Achiev.		Total Achiev.		Range Achiev. Ranks	Subject rank difference from total school achievement.		
	Test Factors 13 +14	Rank	Test Factors 15+16	Rank	Test Factors 17+18	Rank	Sum of Test Factors	Rank		E	R	M
Addams	81.19	11	59.76	12	80.81	11	221.76	11	1	-	-1.0	-
Ahwahnee	95.24	2	75.16	7	94.37	6	264.71	6	5	4.0	-1.0	-
Cooper	85.75	9	71.53	9	86.06	9	243.34	9	0	-	-	-
Ft. Miller	90.59	8	74.95	8	86.22	8	251.76	8	0	-	-	-
Hamilton	91.15	5	81.99	5	94.48	5	267.62	5	0	-	-	-
Irwin	64.57	14	53.11	14	60.26	14	177.94	14	0	-	-	-
Kings Canyon	90.74	6.5	80.27	6	92.98	7	263.99	7	1	0.5	1.0	-
Sequoia	75.16	13	61.47	11	72.26	13	208.89	12	2	1.0	1.0	-1.0
Sierra	94.60	3	84.40	2	95.15	3	274.15	2	1	-1.0	-	-1.
Tenaya	97.84	1	86.41	1	104.38	1	288.63	1	0	-	-	-
Tioga	90.74	6.5	82.57	4	95.48	2	268.79	4	4.5	-2.5	-	2.0
Washington	75.21	12	59.03	13	73.32	12	207.56	13	1	1.0	-	1.0
Wawona	92.71	4	82.68	3	94.90	4	270.29	3	1	-1.0	-	-1.0
Yosemite	84.76	10	70.34	10	81.82	10	236.92	10	0	-	-	-

Table X

JUNIOR HIGH SCHOOL ACADEMIC APTITUDE

RANK COMPARED TO ACHIEVEMENT

	TOTAL ACADEMIC APTITUDE Test Factors 11 & 12	Rank	TOTAL ACHIEV. RANK (Table IX)	APTITUDE ACHIEVEMENT RANK DIFFERENCE
Addams	188.03	11	11	0
Ahwahnee	212.26	2	6	-4
Cooper	200.12	9	9	0
Ft. Miller	205.25	8	8	0
Hamilton	210.96	3	5	-2
Irwin	171.19	14	14	0
Kings Canyon	207.94	5	7	-2
Sequoia	185.75	12	12	0
Sierra	207.89	6	2	+4
Tenaya	216.91	1	1	0
Tioga	208.13	4	4	0
Washington	184.50	13	13	0
Wawona	207.08	7	3	+4
Yosemite	192.56	10	10	0

Geographical Distribution of Achievement and Aptitude Rankings

An additional illustration of the achievement ranks is made by geographical distribution. Figure XI locates each junior high in the district and indicates its achievement rank. Aptitude ranks are illustrated by geographical distribution in Figure XII.

An analysis of the achievement compared to aptitude was made in Figure XIII by identifying those schools where the achievement rank was greater or less than the aptitude rank.

Senior High School Achievement and Aptitude

Table XI gives the aptitude and achievement results from the testing of the 10th grade in the senior high schools. The total aptitude was determined by adding the verbal and non-verbal aptitude scores of the first two columns. The high schools were then ranked on a scale of 1 through 6. The only achievement score available for this study was the one for reading. Reading achievement is compared with total aptitude in the final column. In each case, the school's indicated achievement is within a 0.5 rank of the indicated aptitude.

The effect of the high school program on student achievement can in no way be indicated from the data in Table XI. The test factors used at this level (19 - 21) are administered at the beginning of the tenth grade before the student has participated in a high school program. There is only one other achievement test given in high school (see Table I) and that is for the sole use of determining remedial mathematics placement in grade twelve. Other than this test, there is no evaluation of the high school educational program in terms of standardized testing.

Data in this table cannot be interpreted as an indication of the on-going programs in the feeder junior high schools since junior high school attendance boundaries are not necessarily congruent with those of the high schools. A school may be wholly within a high school attendance area, whereas another school, may be divided into four areas as is illustrated in Figure XIV. Other complicating factors are the further mixing of student populations at this level due to the closing of certain schools, e.g. Longfellow, and the present district policy of open enrollment.

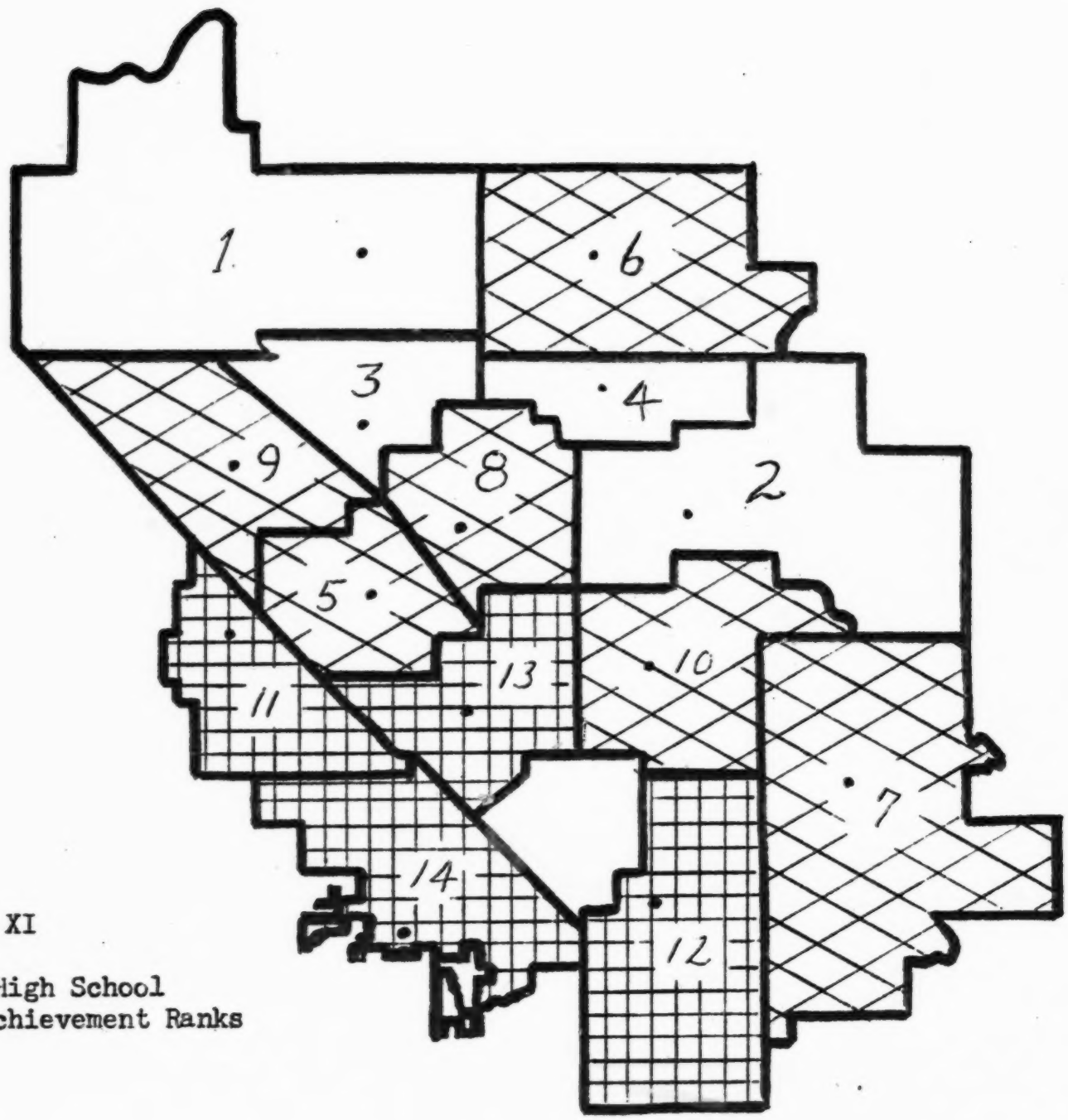


Figure XI

Junior High School
Total Achievement Ranks

Rank 1 to 4

1 Tenaya
2 Sierra
3 Wawona
4 Tioga

Rank 5 to 10

5 Hamilton
6 Ahwahnee
7 Kings Canyon
8 Fort Miller
9 Cooper
10 Yosemite

Rank 11 to 14

11 Addams
12 Sequoia
13 Washington
14 Irwin

The unidentified district is Longfellow. Students from this district are attending several different schools due to the closing of Longfellow.

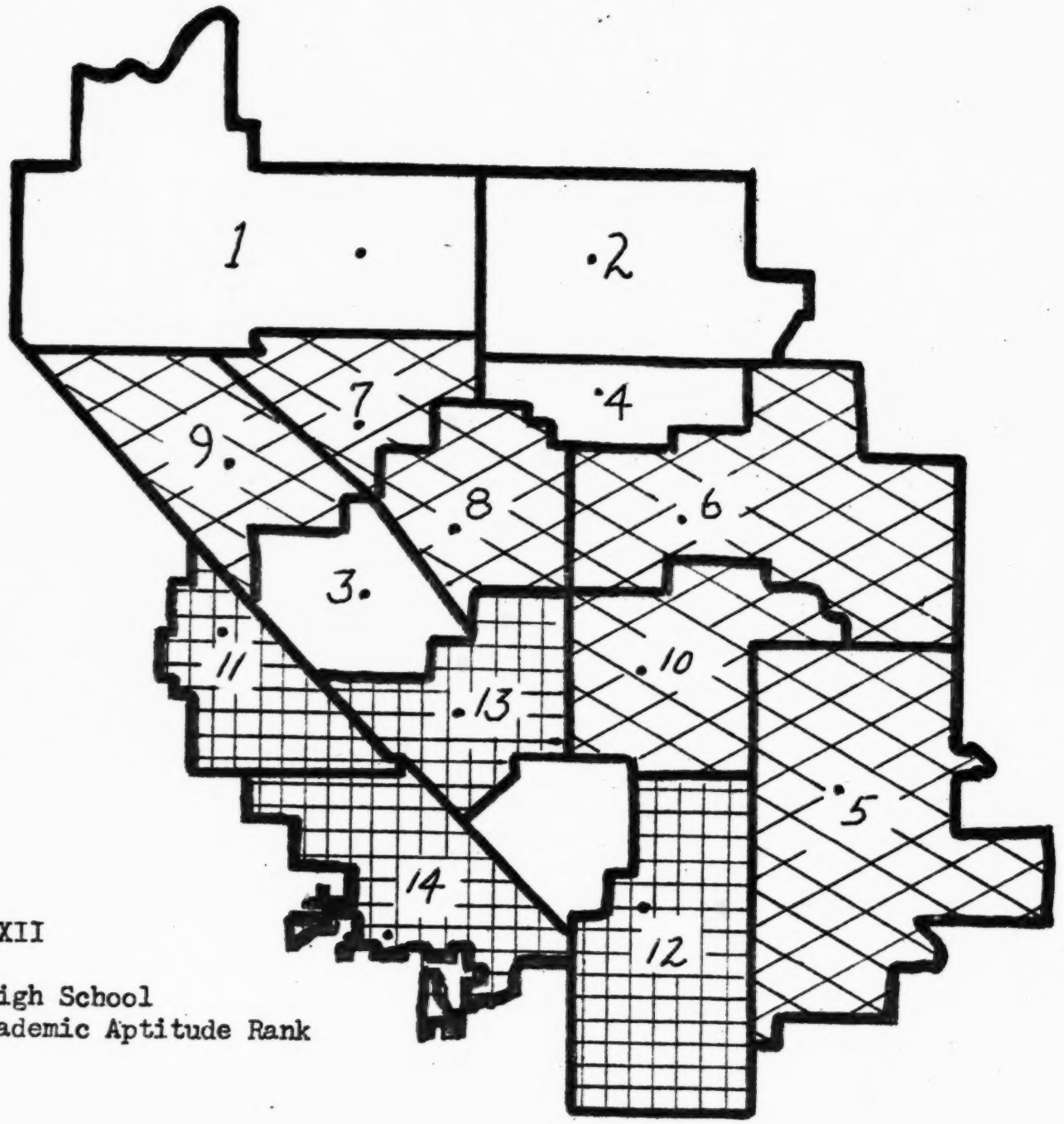


Figure XII

Junior High School
Total Academic Aptitude Rank

Rank 1 to 4

1 Tenaya
2 Ahwahnee
3 Hamilton
4 Tioga

Rank 5 to 10

5 Kings Canyon
6 Sierra
7 Wawona
8 Fort Miller
9 Cooper
10 Yosemite

Rank 11 to 14

11 Addams
12 Sequoia
13 Washington
14 Irwin

The unidentified district is Longfellow. Students from this district are attending several different schools due to the closing of Longfellow.

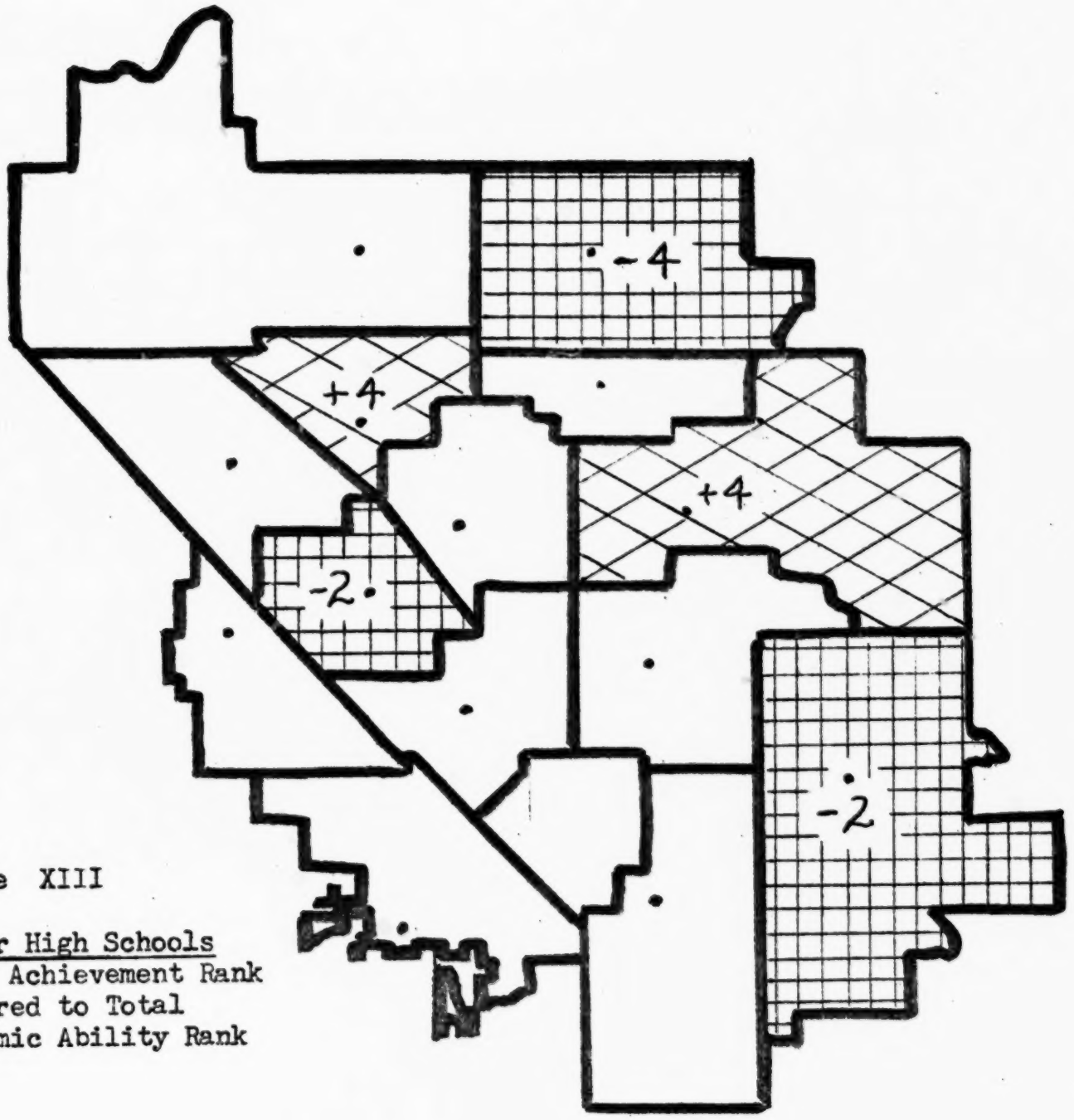
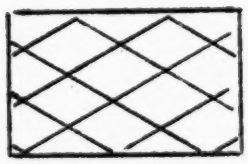


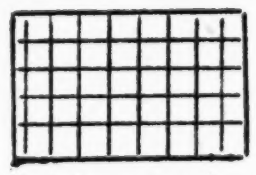
Figure XIII

Junior High Schools
Total Achievement Rank
Compared to Total
Academic Ability Rank



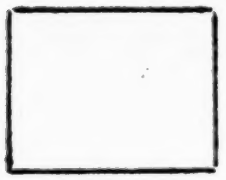
Achievement
Above Aptitude

+ 4 Sierra
+ 4 Wawona



Achievement
Below Aptitude

- 2 Hamilton
- 2 Kings Canyon
- 4 Ahwahnee



Achievement
Same As
Aptitude

Addams
Cooper
Fort Miller
Irwin
Sequoia
Tenaya
Tioga
Washington
Yosemite

Table XI

SENIOR HIGH SCHOOL

ACHIEVEMENT AND APTITUDE

GRADE 10

	VERBAL APTITUDE		NON-VERBAL APTITUDE		TOTAL APTITUDE		READING ACHIEVE.		APTITUDE ACHIEVE. RANK DIFF.
	Test Factor 20	Rank	Test Factor 21	Rank	Test Factor 20 + 21	Rank	Test Factor 19	Rank	
Bullard	105	1	109	1	214	1	37	1.5	-.5
Edison	82	6	87	6	169	6	18	6	0
Fresno	100	4	104	3	204	4	33	3.5	+.5
Hoover	104	2	108	2	212	2	37	1.5	+.5
McLane	101	3	105	4	206	3	33	3.5	-.5
Roosevelt	95	5	97	5	192	5	29	5	0

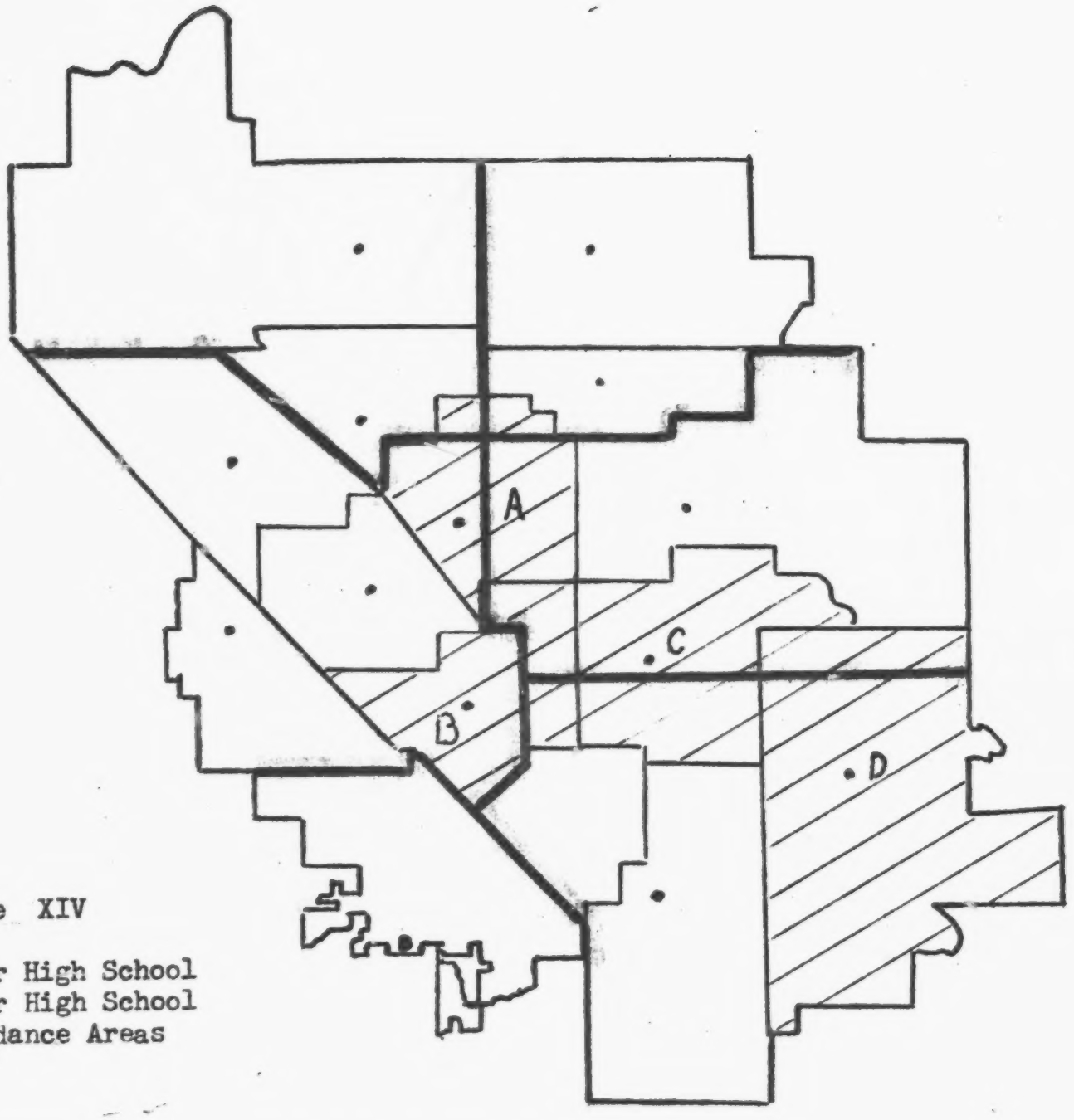


Figure XIV

Junior High School
Senior High School
Attendance Areas

Senior High School Attendance Area

Junior High School Attendance Area

Junior High Schools Placing
Students In More Than One
Senior High School

A Fort Miller to Bullard, Fresno, Hoover and McLane
B Washington to Fresno, McLane, and Roosevelt
C Yosemite to McLane and Roosevelt
D Kings Canyon to McLane and Roosevelt

PART II: ANALYSIS OF RELATIONSHIP OF SELECTED POTENTIAL CAUSAL VARIABLES TO ACHIEVEMENT

Part I of this report analyzed the existing standardized test data and indicated achievement and aptitude patterns within individual schools, among schools, and in terms of geographical patterns. The substance of these reports was cognitive, and no attempt was made to imply causal effect of any of the pertinent factors. In effect, Part I was an analysis of status quo.

Part II is designed to indicate correlative relationships between available test scores and a series of factors which potentially influence achievement and/or aptitude.

The number of factors which may be logically assumed to have some influence upon achievement are practically limitless, and often difficult to define in terms objective enough to allow empirical analysis. Factors such as health, individual student emotional make-up, or student home environment must be considered pertinent but lend themselves more appropriately to analysis on an individual basis.

There are, however, a significant number of factors that might be correlated with student achievement to provide a potential source of prediction or remediative direction. Possible factors in this category might be:

Language spoken in home
Family income
Public assistance status
Student's in foster home
Housing conditions (sub-standard)
Educational attainment of household head.
Sub-standard school facilities
Double session status
School size
Illness absences
Mobility of student/family
Compensatory Education status
Particular compensatory education programs
Average class size
Ethnicity (by school or area)
Pupil-teacher ratio
Teacher experience
Number of teachers on probationary status/by school
Teacher mobility
Student transfers by open enrollment.

This list is by no means exhaustive, but represents potential sources which appear on face analysis to be practicable.

A thorough analysis of all factors listed above is beyond the range of this project; therefore, factors which were available within the limits of time and staff have been pursued. Part II of this report analyzes factors involving probationary teacher percentages, ethnic factors, school size, student mobility and compensatory status as compared to the achievement and aptitude data presented in Part I.

Tables XIII, XIV and XV present basic data on which the analyses will be based.

Column 1 — A "C" in this column indicates the school is a compensatory school.

Column 2 — School enrollment November 13, 1967 - Elementary schools (3)*
School enrollment November 13, 1967 - Jr.-Sr. H. schools (2)

Column 3 — School rank by enrollment size rank 1 indicating the smallest school, and larger numbers indicating the larger schools.

Column 4 — Percent Spanish surname. (7)

Column 5 — Percent Negro. (7)

Column 6 — Percent total minority (Spanish surname, Negro, Oriental, all others). (7)

Column 7 — Average Class size - Elementary schools (5)
Average class size - Jr.-Sr. H. schools (4)

Column 8 — School rank by average class size. Rank indicates the smallest average class size and larger numbers indicating schools having progressively larger average class size.

Column 9 — Mobility - The sum of students entering and leaving a school for the school year (1967-1968). (1)

Column 10 — Percent mobility - Mobility (Column 9) divided by enrollment (Column 2).

Column 11 — School rank by percent. 1 indicating the least mobility (Wawona) and 14 the greatest mobility (Washington).

Column 12 — Percentage of probationary teachers. (11)

* Parenthetical enclosures cite data sources in the bibliography.

Table XIII

ELEMENTARY SCHOOL DATA

Elementary School	Compensatory	Enrollment Nov. 13, 1967	Enrollment Ranking	% Spanish Surname	% Negro	% Minority	Average Class Size	Average Class Size Rank	Mobility	% Mobility	Mobility Rank	% Probationary Teachers
Addams	C	405	8	29	2	34.6	26.7	19	212	52.3	44	43
Aynesworth	C	306	4	63		65.2	22.8	3	112	36.6	35	61
Baird		569	23	3		6.3	31.5	52	123	21.6	18	41
Birney		561	22	10		15.7	29.7	44	345	61.5	51	31
Bullard		536	20	5		8.0	27.2	22.5	68	12.7	7	15
Burroughs		867	44	24		25.7	31.1	51.0	339	39.1	38	38
Calwa	C	743	40	66		66.4	26.9	20	353	47.5	43	27
Carver	C	534	19	4	95	99.2	22.4	2	123	23.0	23	36
Centennial		852	43	6		11.0	26.3	15	113	13.3	10	15
Columbia	C	497	16	25	74	99.3	23.4	4	158	31.8	29	63
Dailey		576	24	8		9.1	29.5	41	159	26.7	27	20
Del Mar		424	10	9		10.5	30.6	49	163	38.4	36	8
Easterby		748	41	10		12.2	29.3	40	68	9.1	2	8
Emerson	C	261	2	63	13	75.4	24.2	2	103	39.5	39	30
Ericson		383	7	3		7.7	29.6	42.5	52	13.8	12	6
Ewing		872	45	12		14.6	28.0	30	119	13.6	11	21
Figarden	C	105	1	43		43.4	21.0	1	59	56.2	18	83
Franklin	C	978	48	25	71	98.8	24.5	8	220	22.5	21	75
Fremont		435	11	18		21.9	29.1	38	96	22.1	20	29

Elementary School	Compensatory	Enrollment Nov. 13, 1967	Enrollment Ranking	% Spanish Surname	% Negro	% Minority	Average Class Size	Average Class Size Rank	Mobility	% Mobility	Mobility Rank	% Probationary Teachers
Gibson		607	29.5	-	-	3.4	30.5	48	62	10.2	3	25
Heaton		619	32	16.0	-	24.4	28.8	35	240	38.8	37	43
Holland		1055	51	1.0	-	9.4	30.2	45	339	32.1	30	24
Homan		621	34	1.0	-	20.8	29.0	37	189	30.4	28	40
Jackson		492	15	37.0	-	33.8	28.5	33	201	40.8	40	29
Jefferson	C	607	29.5	56.0	-	56.4	26.3	14.0	336	55.3	47	48
Kirk	C	591	26	17.0	82	98.9	24.0	6	249	42.1	41	58
Kratt		361	6	9.0	-	13.0	25.6	11	121	33.5	32	7
Lafayette		530	18	19.0	-	21.5	28.0	30	191	36.0	34	35
Lane	C	983	49	35.0	9	46.0	26.5	17	116	11.8	4	54
Lincoln	C	620	33	47.0	45	98.0	23.6	5	284	45.8	42	48
Lowell	C	464	13	52.0	4	56.0	26.5	17	251	54.1	46	56
Malloch		263	3	-	-	4.0	26.3	14	33	12.5	6	30
Manchester		502	17	6.0	-	10.0	28.0	30	119	23.7	24	33
Mayfair		540	21	23.0		25.0	27.2	22.5	189	35.0	33	21
Muir		599	27	30.0		32.0	28.2	32	315	52.6	45	35
Norseman		642	35	12.0		16.0	27.7	26	138	21.5	17	17
Powers		436	12	9.0		10.0	28.9	17	91	20.9	15	29
Pyle		712	37	5.0		11.0	31.0	50	170	22.8	22	9
Robinson		795	42	7.0		9.0	27.0	21	197	24.8	25	18
Roeding		590	25	10.0		15.0	26.5	17	103	17.5	13	16
Rowell	C	692	36	36.0		39.0	27.7	6	490	70.8	52	35
Scandinavian		609	31	7.0		11.0	30.3	46.5	79	13.0	9	0
Tielman	C	324	5	53.0	39	81.0	25.3	9	186	57.4	49	67

Elementary School	Compensatory	Enrollment	Enrollment Ranking	% Spanish Surname	% Negro	% Minority	Average Class Size	Average Class Size Rank	Mobility	% Mobility	Mobility Rank	% Probationary Teachers
Thomas		1070	52	-	-	1	27.7	26	131	12.2	5	8
Turner		472	14	11.0	-	16.0	30.3	46.5	92	19.5	14	30
Viking		714	38	5.0	-	7.0	26.3	14	155	21.7	19	29
Vinland		733	39	7.0	-	9.0	27.7	26	59	8.0	1	29
Webster	C	602	28	50.0	3	56.0	27.7	26	356	59.1	50	76
Wilson		1054	50	14	-	20.0	28.6	34	276	26.2	26	26
Winchell	C	894	46	61	2.0	64.0	29.6	42.5	296	33.1	31	46
Wishon		416	9	7	-	9.0	29.2	32	89	21.4	16	20
Wolters		920	47	2	-	4.0	29.6	42.5	118	12.8	8	20

Table XIV

JUNIOR HIGH SCHOOL DATA

Junior High School	Compensatory	Enrollment Dec. 1, 1967	Enrollment Rank	% Spanish Surname	% Negro	% Minority	Average Class Size	Average Class Size Rank	Mobility	% Mobility	Mobility Rank	% Probationary
Addams	C	189	1	33	-	37.3	25.5	6.5	120	63.5	12	80
Ahwahnee		711	4	5	-	9.5	*	*	201	28	7	19
Cooper		724	5	24	4	31.6	25.0	4	296	41	10	20
Fort Miller		1075	9	9	8	20.3	26.9	12.5	307	29	8	40
Hamilton		1040	8	9	2	13.4	26.4	10	172	16.5	3	35.80
Irwin	C	620	2	24	74	99.6	22.3	1	226	36	9	35.82
Kings Canyon		1092	10	6	-	8.9	26.9	12.5	204	19	5	34.17
Sequoia	C	1128	11	49	6	57.3	26.3	9	493	44	11	47.61
Sierra		1367	14	6	-	8.4	26.8	11	223	16.3	2	33
Tenaya		911	7	5	-	8.3	25.5	6.5	154	16.9	4	48.57
Tioga		1157	12	6	-	7.1	26.2	8	247	21	6	34.88
Washington	C	629	3	46	7	56.8	23.3	2	469	74	14	35.93
Wawona		1201	13	13	7	19.5	24.3	3	130	10.8	1	47.16
Yosemite		747	6	22	-	25.9	25.3	5	477	63.8	13	31

* Average class size data was not available for Ahwahnee Junior High.

Table XV

HIGH SCHOOL DATA

Senior High School (Grades 10-12)	Compensatory	Enrollment 12-1-67	Enrollment Rank	% Spanish Surname	% Negro	% Minority	Average Class Size	Class Size Rank	Mobility	% Mobility	Mobility Rank	% Probationary Teachers
Bullard		1402	2	2.0	1.0	5.1	26.8	3	172	12	1	28
* Edison	C	1004	1	22.0	75.0	99.9	19.9	1	641	63	6	49
Fresno		2344	4	18.0	3.0	24.7	27.8	4	816	35	5	25
Hoover		1724	3	4.0	1.0	7.3	28.5	6	315	18	2	27
McLane		2664	6	6.0	2.0	10.5	28.3	5	506	19	3	23
Roosevelt	C	2362	5	31.0	2.0	35.0	26.4	2	796	20	4	26

* Edison high school enrollment figures include grades 9-12

Relationship Between the Percentage of Probationary Teachers and Total School Achievement

Table XVI provides basic data to examine the relationship between the percentage of probationary teachers and student achievement. The first column lists the percent of probationary teachers in each elementary school. Schools are then ranked, rank 1 indicating the lowest percentage of probationary teachers. The third column indicates rank of total achievement as determined for the schools (Table VII). The fourth column compares ranks by subtracting the rank of total achievement from the rank of probationary teacher percentage. A positive number in this column shows the rank of achievement is higher than would be expected if one assumes the percentage of probationary teachers to be perfectly correlated with the total achievement of a school.

Figure XV shows the geographical distribution of elementary schools having 40 percent or more probationary teachers; Figure XVI gives the distribution for the elementary schools with 20% or fewer probationary teachers. There is a tendency for a greater percentage of probationary teachers to be found in the southwest part of the district with a comparatively lower percentage in the northeast.

Elementary schools having a rank of total achievement above the rank of probationary teachers are shown in Figure XVII; those with rank of achievement below rank of probationary teachers are shown in Figure XVIII.

The relationship of probationary teachers to total student achievement in the junior high schools is similarly reported in Table XVII.

Figure XIX shows the geographical distribution of the probationary teachers at the junior high school level compared to rank of total achievement. In seven of the fourteen schools, the achievement rank was higher than the percentage rank of probationary teachers; the geographical distribution shows no fixed pattern.

There is no difference in achievement ranks given for the senior high school since the reading achievement scores represent achievement prior to entering the high school. Table XVIII lists the probationary teacher data shown for other levels.

A Pearson product-moment coefficient of correlation was calculated to determine the relationship between the ranks of elementary school probationary teacher percentages and the school total achievement ranks. The correlation between these two variables was .66 which shows a substantial relationship. The greatest number of probationary teachers (40% or more) are shown by geographical distribution in Figure XV. When this distribution is compared with the elementary schools having the lowest achievement (Figure III), a close relationship can be noted.

A similar computation was made for the junior high schools resulting in a correlation of .09 which would indicate no measurable correlation.

Table XVI

ELEMENTARY SCHOOL - RANK OF PROBATIONARY TEACHER PERCENTAGE COMPARED WITH ACHIEVEMENT RANK

Elementary School	Percent Probationary Teachers	Rank by Probationary Teachers	Rank of Total Achievement (from Table VII)	Difference in Rank
Addams	43	39.5	41.5	- 2
Aynesworth	61	47	47.5	- .5
Baird	41	38	13.5	+14.5
Birney	31	30	21	+ 9
Bullard	15	8.5	9	- .5
Burroughs	38	36	31	+ 5
Calwa	27	21	41.5	-20.5
Carver	36	35	47.5	-12.5
Centennial	15	8.5	12	- 3.5
Columbia	63	48	44	+ 4
Dailey	20	14	13.5	- .5
Del Mar	8	5	5.5	- .5
Easterby	8	5	11	- 6
Emerson	30	28	45.5	-17.5
Ericson	6	2	18	-16
Ewing	21	16.5	29	-12.5
Figarden	83	52	51	+ 1
Franklin	75	50	50	0
Fremont	29	24	22.5	+ 1.5
Gibson	25	19	1	+18
Heaton	43	39.5	28	+11.5
Holland	24	18	24.5	- 6.5

Table XVI (Continued)

Elementary School	Percent Probationary Teachers	Rank by Probationary Teachers	Rank of Total Achievement (from TableVII)	Difference in Rank
Homan	40	37	19	+18
Jackson	29	24	36	-12
Jefferson	48	42.5	45.5	- 3
Kirk	58	46	49	- 3
Kratt	7	3	30	-27
Lafayette	35	33	16	+17
Lane	54	44	34	+10
Lincoln	48	42.5	40	+ 2.5
Lowell	56	45	39	+ 6
Mailoch	30	28	2	+24
Manchester	33	31	3	+27
Mayfair	21	16.5	32	-15.5
Muir	35	33	33	0
Norseman	17	11	27	-16
Powers	29	24	7	+17
Pyle	9	7	15	- 8
Robinson	18	12	9	+ 3
Roeding	16	10	17	- 7
Rowell	35	33	38	- 5
Scandinavian	0	1	20	-19
Tielman	67	49	-	-
Thomas	8	5	9	- 4
Turner	30	28	26	+ 2

Table XVI (Continued

Elementary School	Percent Probationary Teachers	Rank by Probationary Teachers	Rank of Total Achievement (from TableVII)	Difference in Rank
Viking	29	21	22.5	+ 1.5
Vinland	29	24	24.5	- .5
Webster	76	51	43	+ 8
Wilson	26	20	35	-15
Winchell	46	41	37	+ 4
Wishon	20	14	4	+10

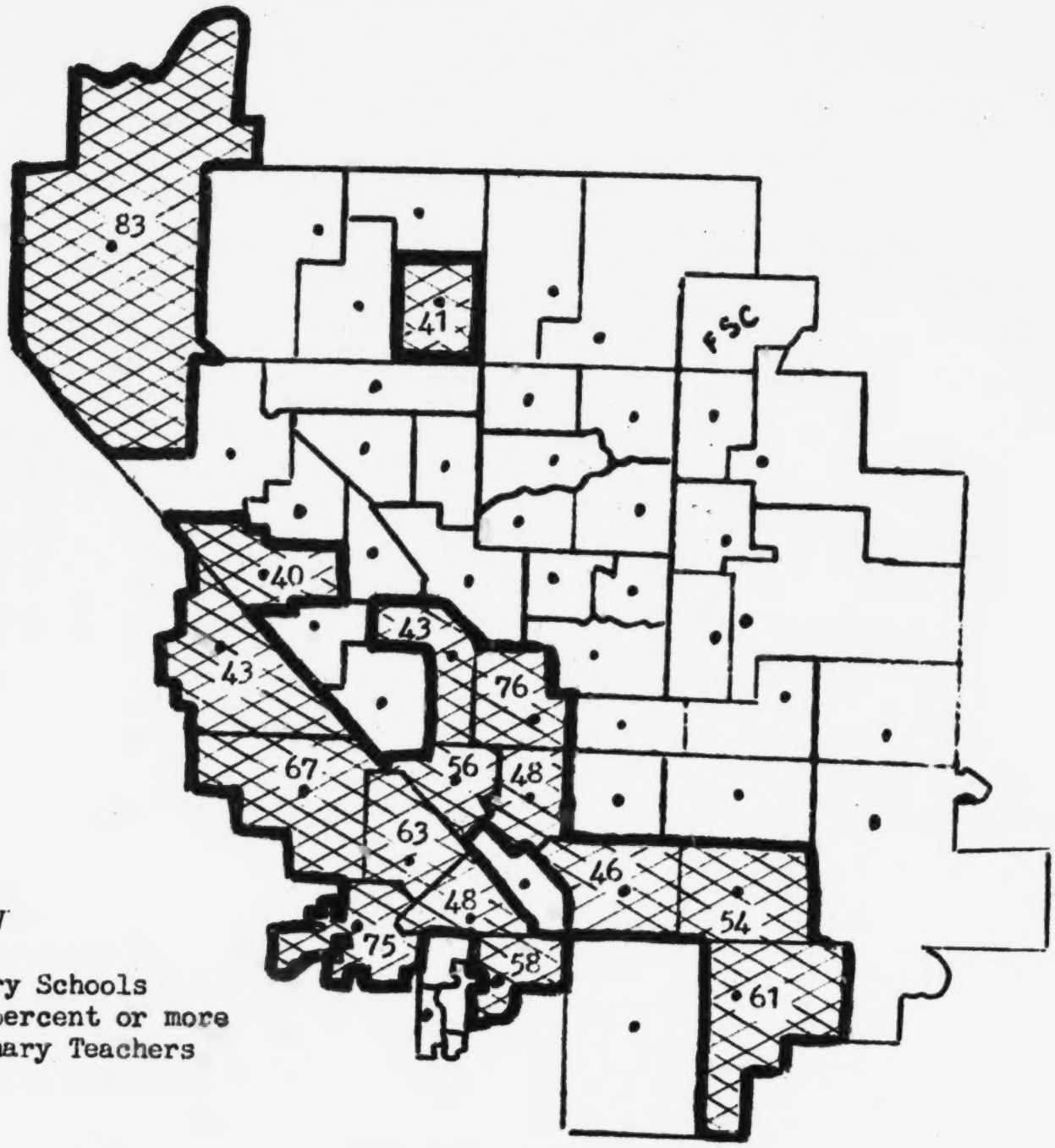


Figure XV

Elementary Schools
With 40 percent or more
Probationary Teachers

Per Cent Probationary Teachers	School
83	Figarden
76	Webster
75	Franklin
67	Tielman
63	Columbia
61	Aynesworth
58	Kirk
56	Lowell
54	Lane
48	Jefferson
48	Lincoln
46	Winchell
43	Addams
43	Heaton
41	Baird
40	Homan

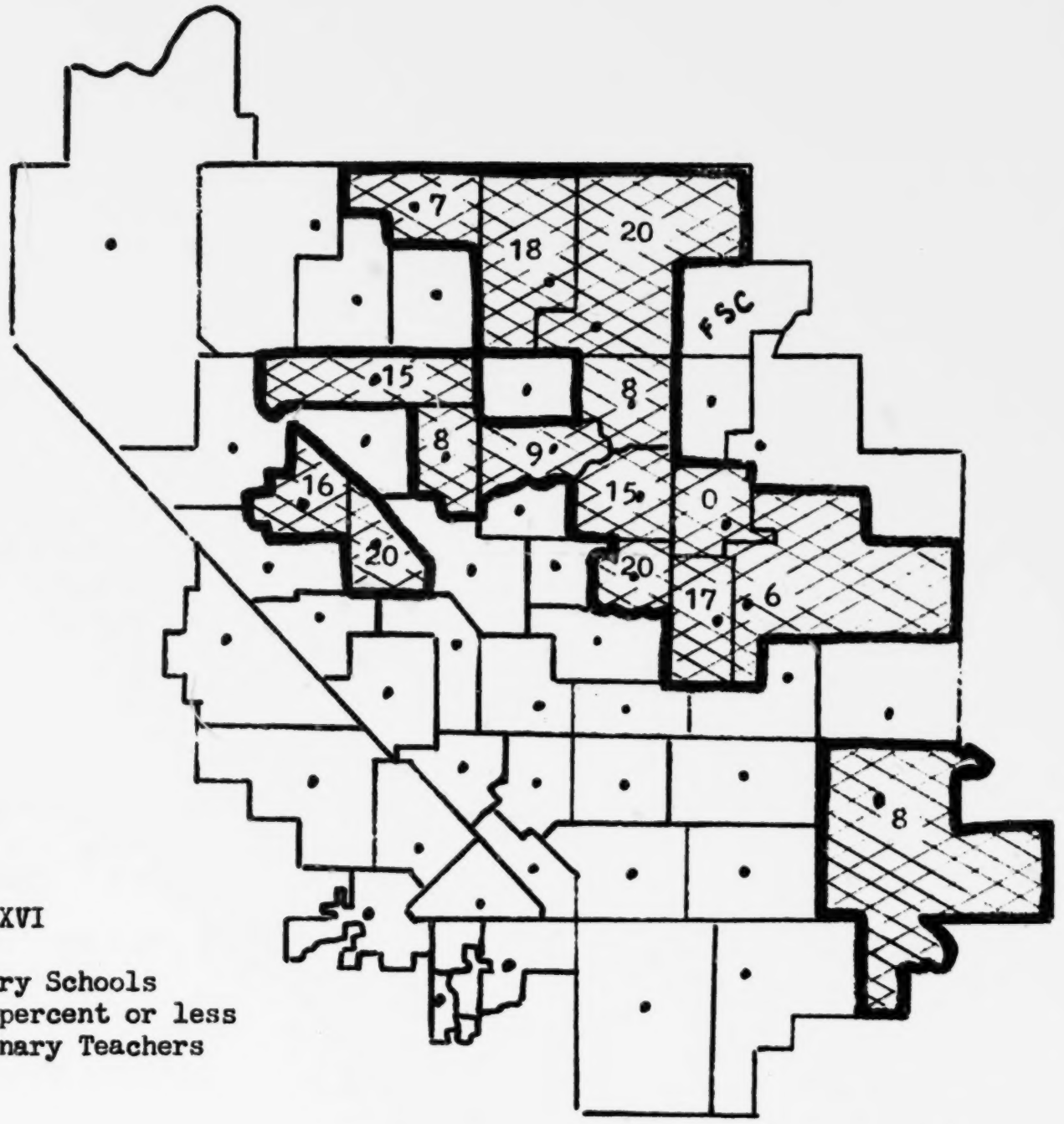


Figure XVI

Elementary Schools
With 20 percent or less
Probationary Teachers

Per Cent Probationary Teachers	School	Per Cent Probationary Teachers	School
0	Scandinavian	15	Centennial
6	Ericson	16	Roeding
7	Kratt	17	Norseman
8	Del Mar	18	Robinson
8	Easterby	20	Daily
8	Thomas	20	Wishon
9	Pyle	20	Wolters
15	Bullard		

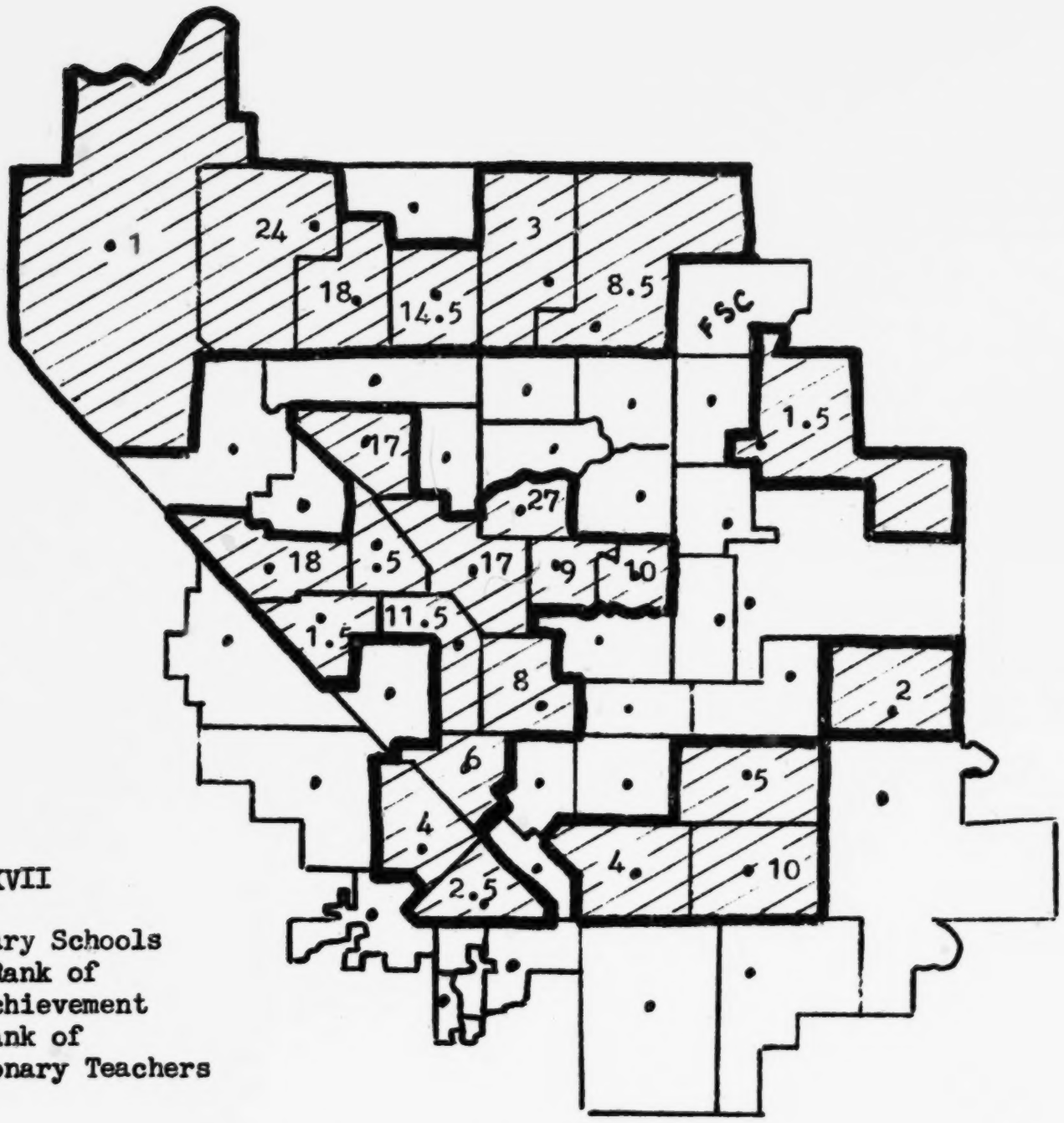


Figure XVII

Elementary Schools
Having Rank of
Total Achievement
Above Rank of
Probationary Teachers

Ranks	School	Ranks	School	Ranks	School
27	Manchester	10	Lane	4	Winchell
24	Malloch	10	Wishon	3	Robinson
18	Gibson	9	Birney	2.5	Lincoln
18	Homan	8.5	Wolters	2	Turner
17	Lafayette	8	Webster	1.5	Fremont
17	Powers	6	Lowell	1.5	Viking
14.5	Baird	5	Burroughs	1	Figarden
11.5	Heaton	4	Columbia	.5	Dailey

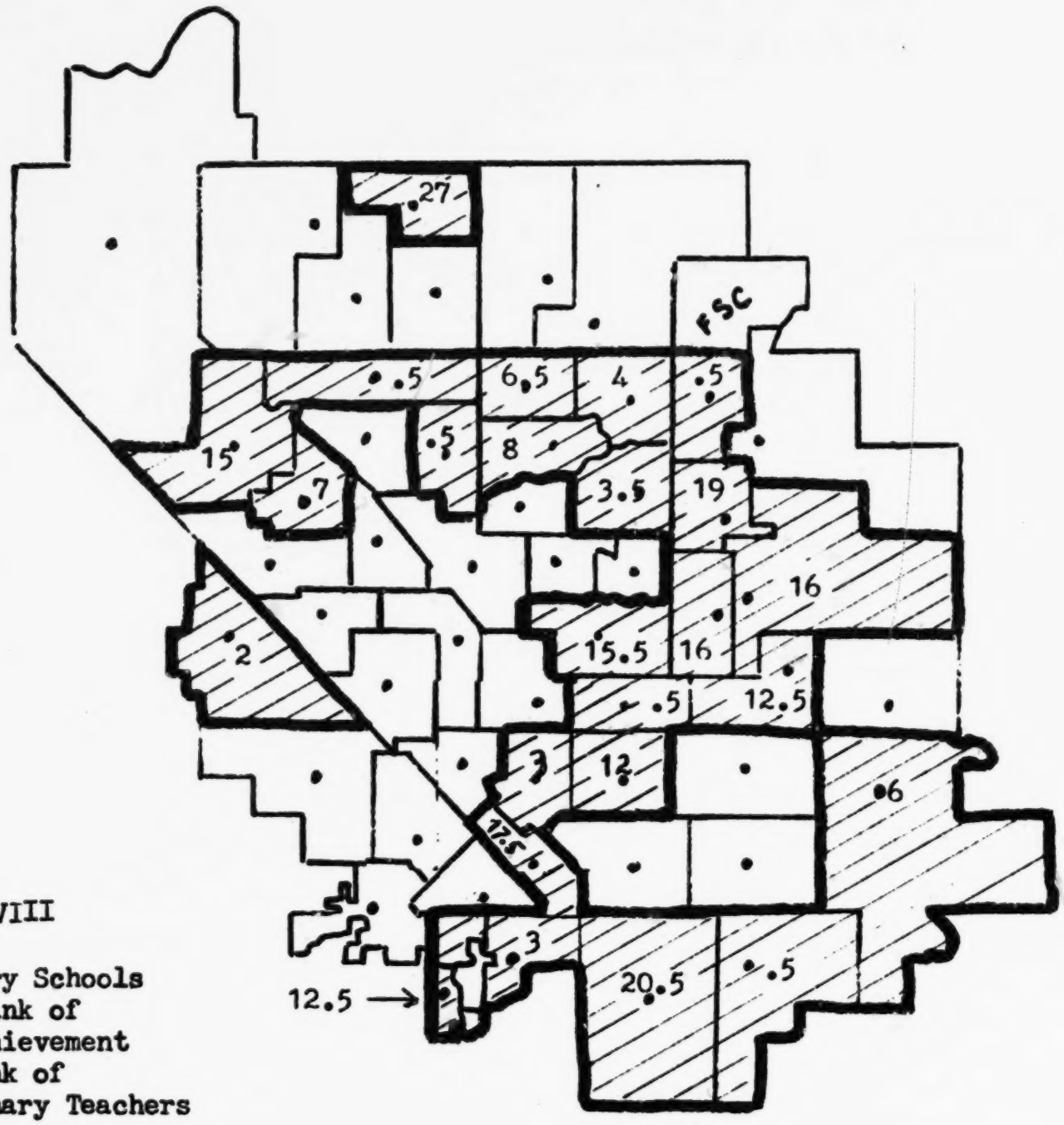


Figure XVIII

Elementary Schools
Having Rank of
Total Achievement
Below Rank of
Probationary Teachers

Ranks	School	Ranks	School	Ranks	School
27	Kratt	12.5	Ewing	3.5	Centennial
20.5	Calwa	12	Jackson	3	Jefferson
19	Scandinavian	8	Pyle	3	Kirk
17.5	Emerson	7	Roeding	2	Addams
16	Ericson	6.5	Holland	.5	Aynesworth
16	Norseman	6	Easterby	.5	Bullard
15.5	Mayfair	5	Rowell	.5	Del Mar
15	Wilson	4	Thomas	.5	Vinland
12.5	Carver				

Table XVII

JUNIOR HIGH SCHOOL - RANK OF PROBATIONARY TEACHER PERCENTAGE COMPARED WITH ACHIEVEMENT RANK

Junior High School	Percent* Probationary Teachers	Rank by Probationary Teachers	Rank of Total Achievement (from Table X)	Difference in Rank
Addams	80	14	11	+ 3
Ahwahnee	19	1	6	- 5
Cooper	20	2	9	- 7
Ft. Miller	40	10	8	+ 2
Hamilton	35.80	7	5	+ 2
Irwin	35.82	8	14	- 6
Kings Canyon	34.17	5	7	- 2
Sequoia	47.61	12	12	0
Sierra	33	4	2	+ 2
Tenaya	48.57	13	1	+12
Tioga	34.88	6	4	- 2
Washington	35.93	9	13	- 4
Wawona	47.16	11	3	+ 8
Yosemite	31	3	10	+ 7

*Because the distribution of probationary teachers was nearly the same in several junior high schools it was necessary to determine the percentage distribution to two decimal places in eight of the fourteen schools.

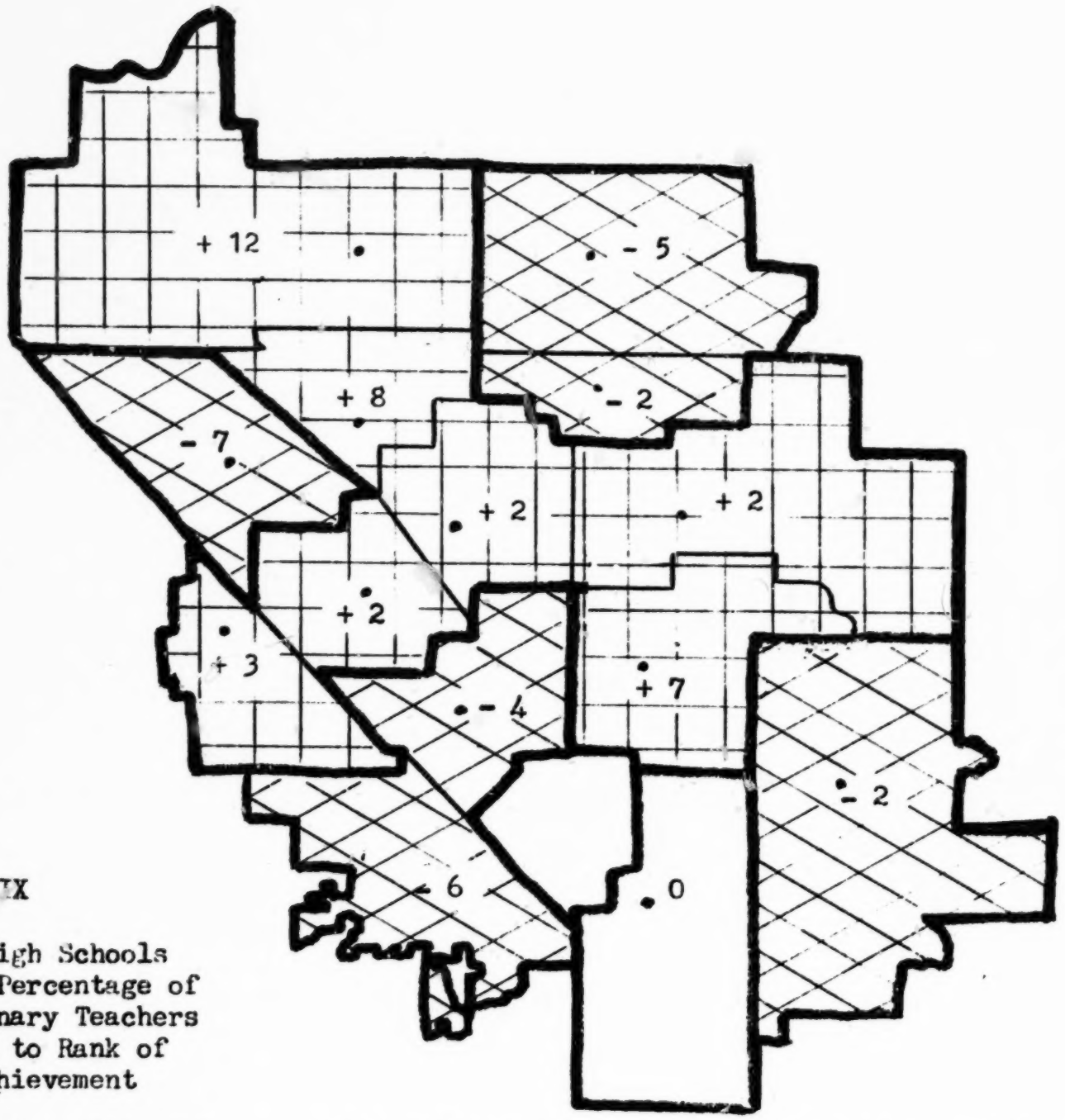


Figure XIX

Junior High Schools
Rank of Percentage of
Probationary Teachers
Compared to Rank of
Total Achievement

Total Achievement Rank
Above Rank of
Probationary Teachers

+ 12 Tenaya
+ 8 Wawona
+ 7 Yosemite
+ 3 Addams
+ 2 Fort Miller
+ 2 Hamilton
+ 2 Sierra

Total Achievement Rank
Below Rank of
Probationary Teachers

- 7 Cooper
- 6 Irwin
- 5 Ahwahnee
- 4 Washington
- 2 Kings Canyon
- 2 Tioga

Total Achievement Rank
Same as Rank of
Probationary Teachers

Sequoia

The district not indicated is Longfellow.

Table XVIII

SENIOR HIGH SCHOOL
RANK OF PROBATIONARY TEACHER PERCENTAGE

Senior High School	Percent Probationary Teachers	Rank by Probationary Teachers
Bullard	28	5
Edison	49	6
Fresno	25	2
Hoover	27	4
McLane	23	1
Roosevelt	26	3

School Achievement Ranks Compared by Ethnic Groups

In Tables XIX and XX elementary and junior high school achievement ranks, respectively, are compared by ethnic groups. The first major column shows the achievement ranks for each school in reading, English and math as previously reported in Tables VII and IX. The following column indicates the major ethnic group for each school based on information in Table XIII and XIV. Each school is classified for purposes of this report on the basis of the major ethnic group represented within the school (over 50% enrollment). In the case of one school, Lincoln, no single ethnic group constitutes the majority; it is categorized separately. The average achievement rank was then determined for each major ethnic group on the basis of school ethnic classifications. Data summaries are found in tables XXI and XXII.

A similar comparison was not made for the high schools because there are no test factors at this level that would evaluate the on-going educational programs.

Table XIX

ELEMENTARY SCHOOL ACHIEVEMENT RANKS COMPARED BY ETHNIC GROUPS

	Achievement Ranks from Table VII			Ethnic Grouping			
	Reading	English	Math	White	Spanish Surname	Negro	No Majority
Addams	45.5	40	41.5	X			
Aynesworth	42.5	47	47		X		
Baird	13.5	15	6.5	X			
Birney	25	20.5	22	X			
Bullard	13.5	11.5	4.5	X			
Burroughs	31	29.5	31.5	X			
Calwa	40	41.5	41.5		X		
Carver	47	45	49			X	
Centennial	13.5	7	13	X			
Columbia	48	43	47			X	
Dailey	7.5	11.5	15.5	X			
Del Mar	5	7	12	X			
Easterby	5	15	12	X			
Emerson	42.5	47	44.5		X		
Ericson	17.5	15	22	X			
Ewing	28.5	27	31.5	X			
Figarden	51	50	47	X			
Franklin	49.5	51	51	X		X	
Fremont	25	23	18.5	X			
Gibson	1	1	1	X			
Heaton	28.5	25	28.5	X			
Holland	28.5	24	22	X			
Homan	17.5	20.5	18.5				
Jackson	36	35.5	34	X			

Table XIX (continued)

	Achievement Ranks from Table VII			Ethnic Grouping			
	Reading	English	Math	White	Spanish Surname	Negro	No Majority
Jefferson	42.5	47	44.5		X		
Kirk	49.5	49	50			X	
Kratt	25	31.5	28.5	X			
Lafayette	20.5	17	12	X			
Lane	36	34	34	X			
Lincoln	45.5	41.5	39				X
Lowell	39	39	40		X		
Malloch	2	2	2	X			
Manchester	3	3.5	4.5	X			
Mayfair	32	31.5	34	X			
Muir	34	33	28.5	X			
Norseman	23	29.5	26	X			
Powers	10	10	6.5	X			
Pyle	7.5	13	15.5	X			
Robinson	13.5	7	9.5	X			
Roeding	16	20.5	15.5	X			
Rowell	38	38	38	X			
Scandinavian	20.5	18	22	X			
Tielman	-	-	-	-			
Thomas	10	3.5	15.5	X			
Turner	28.5	27	22	X			
Viking	20.5	20.5	28.5	X			
Vinland	20.5	27	25	X			
Webster	42.5	44	43		X		
Wilson	33	35.5	36.5	X			
Winchell	36	35.5	36.5		X		
Wishon	10	7	3	X			
Wolters	5	7	9.5	X			

Table XX

JUNIOR HIGH SCHOOL ACHIEVEMENT RANKS COMPARED BY ETHNIC GROUPS

	Achievement Ranks from Table IX			Ethnic Grouping		
	Reading	English	Math	White	Spanish Surname	Negro
Addams	11	11	12	X		
Ahwahnee	6	2	7	X		
Cooper	9	9	9	X		
Ft. Miller	8	8	8	X		
Hamilton	5	5	5	X		
Irwin	14	14	14			X
Kings Canyon	7	6.5	6	X		
Sequoia	13	13	11		X	
Sierra	3	3	2	X		
Tenaya	1	1	1	X		
Tioga	2	6.5	4	X		
Washington	12	12	13		X	
Wawona	4	4	3	X		
Yosemite	10	10	10	X		

Table XXI

SUMMARY OF AVERAGE RANK ACHIEVEMENT FOR

ELEMENTARY SCHOOLS BY MAJOR ETHNIC GROUPS

Majority Ethnic Group	Average Rank Reading Achievement	Rank Range	Average Rank English Achievement	Rank Range	Average Rank Math Achievement	Rank Range
White (39 schools)	20.6	(51-1)	20.4	(50-1)	20.5	(47-1)
Spanish Surname (7 schools)	40.6	(42.5-36)	43.0	(47-35.5)	42.3	(47-35.5)
Negro (4 schools)	48.5	(49.5-47)	42.0	((51-43)	49.3	(51-47)
No Majority (1 school)	45.5	-	41.5	-	39.0	-

Table XXII

SUMMARY OF AVERAGE RANK ACHIEVEMENT FOR

JUNIOR HIGH SCHOOLS

BY MAJOR ETHNIC GROUPS

Majority Ethnic Group	Average Rank Reading Achievement	Rank Range	Average Rank English Achievement	Rank Range	Average Rank Math Achievement	Rank Range
white (11 schools)	6	(11-1)	6	(12-1)	6.09	(12-1)
Spanish Surname (2 schools)	12.5	(13-12)	12.5	(13-12)	12.00	(13-11)
Negro (1 school)	14	(0)	14	(0)	14	(0)

Comparison of Schools Grouped by Income Level and Selected Test Factors

For purposes of this comparison, schools were classified by income levels into low, medium, and high categories. Schools designated as compensatory constitute the low income group. The high income group is made up of the schools that are in the areas of greatest income (family average income greater than $9,000) as reported by the Fresno Planning and Public Works Department (9).

Tables XXIII through XXX show the relationships of family income levels to both aptitude and achievement as reflected in available test scores.

Table XXIII shows the general income level for each elementary school. Table XXIV displays mean test scores, weighted by size of school, for each of three aptitude factors by these income groups. Table XXV provides a similar display of weighted achievement test score means for the seven available achievement factors.

Similar data for the junior high and senior high schools is presented, respectively, in tables XXVI - XXVIII and tables XXIX and XXX. It should be noted that no aptitude factors were available for senior high schools.

Table XXIII

GROUPING OF ELEMENTARY SCHOOLS BY FAMILY INCOME LEVEL

School	Low	Middle	High		Low	Middle	High
Addams	X			Kratt			X
Aynesworth	X			Lafayette		X	
Baird		X		Lane	X		
Birney		X		Lincoln	X		
Bullard			X	Lowell	X		
Burroughs		X		Malloch			X
Calwa	X			Manchester		X	
Carver	X			Mayfair		X	
Centennial		X		Muir		X	
Columbia	X			Norseman		X	
Dailey		X		Powers		X	
Del Mar		X		Pyle		X	
Easterby		X		Robinson			X
Emerson	X			Roeding		X	
Ericson		X		Rowell	X		
Ewing		X		Scandinavian		X	
Figarden	X			Tielman	X		
Franklin	X			Thomas		X	
Fremont		X		Turner		X	
Gibson			X	Viking		X	
Heaton		X		Vinland		X	
Holland		X		Webster	X		
Homan		X		Wilson		X	
Jackson		X		Winchell	X		
Jefferson	X			Wishon		X	
Kirk	X			Wolters			X

Table XXIV

APTITUDE COMPARISONS BY INCOME LEVEL GROUPS

USING WEIGHTED MEAN SCORES - ELEMENTARY SCHOOLS

Aptitude Test Factor	Low Income		Medium Income		High Income	
	Mean	Range *	Mean	Range*	Mean	Range*
# 1	96.84	(13)	109.14	(16)	111.87	(10)
9	92.44	(11)	101.75	(12)	107.18	(10)
10	92.41	(17)	105.83	(19)	111.29	(13)

Table XXV

ACHIEVEMENT COMPARISONS BY INCOME LEVEL GROUPS
USING WEIGHTED MEAN SCORES - ELEMENTARY SCHOOLS

Achievement Test Factor	Low Income		Medium Income		High Income	
	Mean	Range*	Mean	Range*	Mean	Range*
# 2	16.63	(10)	23.38	(7)	25.87	(6)
3	26.04	(16)	33.19	(10)	37.44	(10)
4	22.72	(9)	28.35	(8)	31.18	(10)
5	70.39	(17)	80.24	(15)	86.46	(16)
6	11.71	(6)	14.10	(9)	16.82	(7)
7	11.58	(3)	14.66	(6)	16.79	(6)
8	13.57	(6)	18.10	(6)	21.28	(8)

* This figure represents the range of school scores based on mean scores presented in Table IV. Mean score data for each school were available only as whole numbers; mean score ranges for sets of schools are consequently reported as whole numbers.

Table XXVI

GROUPING OF JUNIOR HIGH SCHOOLS BY FAMILY INCOME LEVEL

School	Low	Medium	High	School	Low	Medium	High
Addams	X			Sequoia	X		
Ahwahnee		X		Sierra		X	
Cooper		X		Tenaya			X
Ft. Miller		X		Tioga		X	
Hamilton		X		Washington	X		
Irwin	X			Wawona		X	
Kings Canyon		X		Yosemite			

Table XXVII

APTITUDE COMPARISONS BY FAMILY INCOME LEVEL GROUPS

USING WEIGHTED MEAN SCORES - JUNIOR HIGH SCHOOLS

Aptitude Test Factor	Low Income		Medium Income		High Income	
	Mean	Range*	Mean	Range*	Mean	Range*
#11	89.78	(3)	104.20	(8)	110.71	1 school
#12	91.57	(4)	101.78	(9)	106.20	1 school

* This figure represents the range of school rank, based on mean scores presented in Table V, within each of the 3 income level groups.

Table XXVIII

ACHIEVEMENT COMPARISONS BY FAMILY INCOME LEVEL GROUPS

USING WEIGHTED MEAN SCORES - JUNIOR HIGH SCHOOLS

Achievement Test Factor	Low Income		Medium Income		High Income	
	Mean	Range*	Mean	Range*	Mean	Range*
#13	57.58	(3)	76.16	(8)	77.25	1 school
#14	14.84	(3)	18.69	(8)	20.59	1 school
#15	22.94	(3)	30.87	(8)	34.83	1 school
#16	35.30	(3)	47.92	(8)	51.58	1 school
#17	30.57	(3)	40.98	(8)	45.59	1 school
#18	38.96	(3)	50.49	(8)	58.79	1 school

* This figure represents the range of school ranks based on mean scores presented in Table V.

Table XXIX

GROUPING OF HIGH SCHOOLS BY INCOME LEVEL GROUPS

School	Low	Medium	High		Low	Medium	High
Bullard			X	Hoover		X	
Edison	X			McLane		X	
Fresno		X		Roosevelt	X		

Table XXX

COMPARISONS OF AVAILABLE TEST FACTORS

USING WEIGHTED MEAN SCORES - HIGH SCHOOLS

Achievement Test Factors	Low Income		Med. Income		High Income	
	Mean	Range*	Mean	Range*	Mean	Range*
Reading #19	26.69	(1)	34.07	(2)	37.00	(**)
Verbal #20	90.69	(1)	101.47	(2)	105.00	(**)
Non-Verbal #21	91.74	(1)	105.47	(2)	109.00	(**)

* This figure represents the range of school ranks based on mean scores presented in Table VI.

** One School

Comparisons of Aptitude and Achievement by School Size

In this section, achievement and aptitude scores for each school level - elementary, junior high and senior high - are compared on the basis of size classification (large or small) according to enrollment figures from Tables XIII, XIV, and XV. Elementary schools having enrollments over 600 are considered large schools; those below 600, small. Junior high schools are considered large if over 1,000 enrollment; senior high schools are considered large if over 2,000.

Size does not appear to be a factor in the mean achievement of the elementary school students (Table XXXI). The variance of aptitude means of the students in both large and small schools at this level likewise does not appear to be significant.

Students in the large junior high schools (Table XXXII) do show both higher mean aptitude scores and higher mean achievement scores. Here the differences range from 2.17 points on test factor #14 to 8.99 points on test factor #16.

The testing results for high schools (Table XXXIII, administered in the tenth grade) can only indicate the potential aptitude and the reading achievement of the entering students; they cannot be interpreted to measure the results of the educational program of a given school. The entering students for the smaller high schools show a slight advantage in terms of the three tests administered at this level. A note of caution must be inserted here as the two small schools represent extremes of achievement. Edison has a rank of 6 in all tests, Bullard is ranked 1. The comparison is thus of little value.

Table XXXI

COMPARISONS OF ELEMENTARY SCHOOL SIZE OF ENROLLMENT AND AVAILABLE TEST FACTORS

Test Factor	Large (Greater than 600)		Small (Less than 600)	
	Weighted Mean	Range *	Weighted Mean	Range *
#1	105.77	(25)	105.18	(30)
#2	21.87	(15)	21.33	(17)
#3	30.93	(22)	31.18	(28)
#4	26.91	(16)	26.69	(16)
#5	76.68	(36)	77.26	(30)
#6	13.44	(12)	13.84	(12)
#7	13.88	(10)	13.87	(9)
#8	16.53	(15)	17.27	(13)
#9	98.90	(27)	99.23	(14)
#10	102.82	(35)	102.85	(27)

COMPARISON OF ELEMENTARY SCHOOLS BY MEAN TOTAL APTITUDE - MEAN TOTAL ACHIEVEMENT

	Large	Small
Mean Total Aptitude	307.49	307.26
Mean Total Achievement	200.24	201.44

* This figure represents the range of school scores based on mean scores presented in Table IV. Mean score data for each school were available only as whole numbers; mean score ranges for sets of schools are consequently reported as whole numbers.

Table XXXII

COMPARISONS OF JUNIOR HIGH SCHOOL SIZE
OF ENROLLMENT AND AVAILABLE TEST FACTORS

	Large (Greater than 1,000)		Small (Less than 1,000)	
Test Factor	Weighted Mean	Range *	Weighted Mean	Range *
#11	103.13	(12)	95.27	(12)
#12	101.66	(11)	94.88	(11)
#13	71.03	(11)	63.16	(12)
#14	18.40	(12)	16.33	(12)
#15	30.44	(11)	25.71	(11)
#16	47.63	(9)	38.64	(13)
#17	40.20	(12)	34.72	(12)
#18	50.62	(11)	42.89	(8)

COMPARISONS OF JUNIOR HIGH SCHOOLS
BY MEAN TOTAL APTITUDE - MEAN TOTAL ACHIEVEMENT

	Large	Small
Mean Total Aptitude	204.79	190.15
Mean Total Achievement	258.32	221.45

* This figure represents the range of school ranks based on mean scores presented in Table V.

Table XXXIII

COMPARISONS OF SENIOR HIGH SCHOOL BY SIZE

OF ENROLLMENT AND AVAILABLE TEST FACTORS

	Large (Greater than 2000)		Small (Less than 2000)	
Test Factor	Weighted Mean	Range *	Weighted Mean	Range *
#19	31	(1.5)	33	(4.5)
#20	98	(2)	100	(5)
#21	99	(2)	104	(5)

COMPARISONS OF HIGH SCHOOLS

BY MEAN TOTAL APTITUDE - MEAN TOTAL ACHIEVEMENT

	Large	Small
Mean Total Aptitude	197	204
Mean Total Achievement	31	33

* This figure represents the range of school ranks based on mean scores presented in Table VI.

Comparisons of Test Factor Scores - Compensatory and Non-Compensatory Schools

A comparison of test factor weighted mean scores in the compensatory schools has been made with the other schools of the district; the results are tabulated in Tables XXXIV, XXXV and XXXVI.

The weighted means for each test factor were computed for the compensatory and non-compensatory schools and were entered in the second column. The range of the schools over each test factor score is given in the first column. The difference in weighted mean score between the compensatory and the non-compensatory schools is shown in the last column. In all cases covering test factors 1 to 10 and 11 to 18 the compensatory schools scored the lower of the two groups.

In achievement the widest divergence between the compensatory and non-compensatory schools is in English (language - factors #5 and #13) and least in math (computation - #6 and #14).

Table XXXIV

ELEMENTARY SCHOOL TEST FACTOR COMPARISONS OF COMPENSATORY AND NON-COMPENSATORY SCHOOLS

Test Factor	Range of Mean Scores*		Weighted Mean		
	Comp. (Low SES)	Non-Comp.	Comp.	Non-Comp.	Compensatory School Differences
# 1 **	13	16	94.31	109.61	- 15.30
# 2	10	10	15.70	23.80	- 8.10
# 3	16	13	21.36	32.83	- 11.47
# 4	9	11	16.02	28.83	- 12.81
# 5	14	20	64.69	81.31	- 16.62
# 6	6	11	10.89	14.57	- 3.68
# 7	3	7	10.22	15.03	- 4.81
# 8	5	6	12.02	18.64	- 6.62
# 9	9	15	88.98	102.68	- 13.70
#10	17	23	91.92	104.17	- 12.25

* Mean score data for each school were available only as whole numbers; mean score ranges for sets of schools are consequently reported as whole numbers.

** #1 (only) is a median score.

Table XXXV

JUNIOR HIGH TEST FACTOR COMPARISONS OF COMPENSATORY AND NON-COMPENSATORY SCHOOLS

Test Factor	Range of Mean Scores*		Weighted Mean		
	Comp. (Low SES)	Non-Comp.	Comp.	Non-Comp.	Compensatory School Differences
#11	9	13	89.80	98.68	- 8.88
#12	8	11	91.58	102.21	- 10.63
#13	14	10	57.77	72.72	- 14.95
#14	3	3	14.84	18.89	- 4.05
#15	3	8	22.94	31.27	- 8.33
#16	6	9	35.30	48.31	- 13.01
#17	11	9	30.57	41.49	- 10.92
#18	10	14	38.96	46.90	- 7.94

* Mean score data for each school were available only as whole numbers; mean score ranges for sets of schools are consequently reported as whole numbers.

Table XXXVI

HIGH SCHOOL TEST FACTOR COMPARISONS OF COMPENSATORY AND NON-COMPENSATORY SCHOOLS

Test Factor	Range of Mean Scores*		Weighted Mean		
	Comp. (Low SES)	Non-Comp.	Comp.	Non-Comp.	Compensatory School Differences
#19	11	4	26.69	34.55	- 7.86
#20	11	5	90.69	102.05	- 11.36
#21	10	5	94.90	106.05	- 11.15

* Mean score data for each school were available only as whole numbers; mean score ranges for sets of schools are consequently reported as whole numbers.

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4. Fresno City Unified School District. Report of Class Size and Teacher-Pupil Load in Junior and Senior High Schools. 1967-68.

5. Fresno City Unified School District. Summary of Average Class Sizes for Kindergarten and Classes in Grades K - 6, Effective October, 1967.

6. Fresno City Unified School District. Inter-agency Planning for Urban Educational Needs. Elementary Schools - High and Middle Income Groups. May 8, 1968.

7. Fresno City Unified School District. Inter-agency Planning for Urban Educational Needs. School Populations by Major Ethnic Groups. May 7, 1968.

8. Fresno City Unified School District. Office of Planning and Research Services. Test Data on Individual Schools. October, 1967.

9. Fresno City and County. Planning and Public Works Department of the City and County of Fresno. Profile on Population and Housing. February, 1964.

10. Fresno City Unified School District. Report of the Design Team for the Development of Equality of Opportunity in Education. December 22, 1966.

11. Fresno City Unified School District. Superintendent of Schools. Report on Teacher Turnover. 1966-1967.

ANALYSIS OF ACHIEVEMENT

MAJOR CONCLUSIONS IDENTIFIED BY PROJECT STAFF

Conclusions from this report must be divided into 2 major areas; those conclusions pertaining to the process of testing and utilization of the testing product (procedural), and those justified by the specific comparative studies included within the report (substantive). It must be born in mind that correlation does not necessarily imply a cause and effect relationship. Conclusions are intended to be used as base data to assist in evaluation and improvement of the instructional program.

Procedural Conclusions:

5- 1. Test data analysis within the Fresno City Unified School District is at present difficult since test results are not easily accessible; results must be obtained from several sources.

5- 2. The Fresno City Unified School District does not at present provide test data on a school by school basis; comparative analysis is consequently difficult.

5- 3. The testing program samples only selected grades.

5- 4. The testing program is heavily weighted to measure cognitive (information) achievement with little measure of affective (attitude) development.

5- 5. The testing program includes almost no achievement measures for significant sectors of the education program such as sciences, social sciences, foreign languages, health, safety and physical education, or vocational education.

5- 6. State mandated testing programs do not recognize the variation of emphasis in instructional objectives which the principle of local control implies.

5- 7. State, national and comparable district norms for presently utilized tests frequently do not exist. Those available make no provision for variation in such factors as socio-economic status.

5- 8. No standardized measure of achievement or aptitude at the high school (10-12 grade) level is currently used in the Fresno City Unified School District (10th grade tests measure accomplishment through junior high school, but can serve only as diagnostic material for the high school).

Substantive Conclusions:

5- 9. On the basis of comparative rank within the district, elementary schools in the north central area score highest in achievement tests; schools in the southwest and west score lowest.

5-10. On the basis of comparative ranks, schools in the north central area of the district score highest in aptitude tests; schools in the southwest score lowest.

5-11. Geographical patterns of school achievement ranking and of aptitude ranking are closely correlated within the Fresno City Unified School District.

5-12. Ranking patterns for the junior high schools are similar geographically to those of their feeder elementary schools.

5-13. There is a direct negative relationship between the proportion of probationary teachers and student achievement scores; no cause-effect conclusion, however, is justified by the study.

5-14. When elementary and junior high schools are categorized by ethnic majority and compared on the basis of tested achievement, white majority schools rank highest, Spanish surname majority next, and Negro majority lowest.

5-15. Both aptitude and achievement scores are directly related at all levels with family income level and with related compensatory education status.

5-16. Family income level, proportion of probationary teachers, ethnic majority, geographic location and aptitude scores are correlated with achievement scores, but the study does not provide material that would support direct causes and effect conclusions.

PROJECT DESIGN

NEEDS ASSESSMENT PUBLICATIONS

1. Brainstorm - Needs Perceived by School Staff
2. Speak-Up - Needs Perceived by Community
3. Student Speak-Up - Needs Perceived by Secondary Students
4. School Staffing
5. Analysis of Achievement
6. Problems Perceived by Educational Leadership

County Schools Survey

7. Vocational Occupational Needs Survey (published by County Regional Planning and Evaluation Center - EDICT)
8. 9. > Other County School Needs Survey Reports (by EDICT)

TASK FORCE

Educational Content Fields

10. Reading
11. Language
12. Mathematics
13. Science
14. Foreign Language
15. Cultural Arts
16. Social Science
17. Physical Education

Other Educational Areas

18. Teaching/Learning Process
19. Special Education
20. Guidance
21. Health
22. Student Personnel
23. Adult Education
24. Vocational Education

Urban Physical Factors

25. Urban Physical Factors

Urban Social and Human Factors

26. Relevance and Quality of Education for Minorities
27. Special Needs of Mexican-Americans
28. Special Needs of Negroes

29. Conclusions from Needs Assessment Publications
30. Summary - Fresno Educational Needs Assessment
31. The Process of Educational Planning